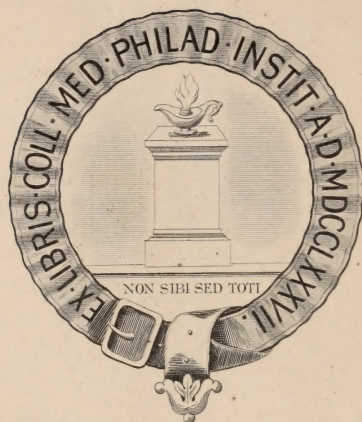


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INTERSTATE MEDICAL JOURNAL.

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No. 1.

EDITORIAL.

THE ANNUAL MEDICAL REVIEW NUMBER.

REVIEW OF MEDICAL LITERATURE FOR 1907.

A review of the immense amount of original literature produced by the prolific writers of this rapid age is entirely beyond the capabilities of any one man. To keep familiar with only the best work done in any one line taxes the limited time devoted entirely to this task of those men restricting themselves to special fields. Yet the absolute necessity of keeping abreast with medical progress is now, more than ever before, appreciated by the entire medical profession. These conditions have produced many publications covering the literature of a given time, in a more or less condensed or abstract form. Year books, issued quarterly or monthly, have attempted to supply the demands for this much desired knowledge. Up to the present time, however, with the exception of the INTERSTATE, no medical journal has undertaken the burden of giving a systematized review of the literature as an annual number of its regular edition. The priority of these review numbers covering every cognate branch of medicine has been undisputed. In 1902 the INTERSTATE inaugurated this annual review, and the growing favor with which it has been received since that time, more than compensates for the continued efforts represented by each January number. The present number is the sixth annual review of medical progress issued by the INTERSTATE, and with its presentation the following editorial comment may not be amiss.

This work involving a detailed amount of labor has been more than merely a review of the literature in each special branch of medicine. On the contrary, besides reviewing the literature, the special departments have conscientiously endeavored, by eliminating all extraneous material, to compile only the valuable productions of the year so as to set forth new departures or diversions, to readjust or correct old principles, and to corroborate or sustain established procedures. In doing this, however, the personalities of the authors have been completely eliminated, and the conclusions have been deducted entirely from the mass of authoritative opinion found in the literature. No claim is made for completeness in

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any one individual review, although the work of the review taken in conjunction with the abstracts in the monthly issues of each department, include the most important original work of the year done in any one special branch.

Granting that mere translation and synopses, with the proper compilation thereof, represent one of the lowest grade of medical writing, no pretense of originality is assumed. A review of these reviews, however, will demonstrate that their purpose has been a more elevating one than that of mere summarization and condensation of medical material. By collecting and systematizing the medical facts discovered during the year they attempt to depict the progressive advancement being made in the respective divisions of medical work. In doing this a two-fold object is accomplished. A retrospection of the actual work performed is detailed, and a prospection of that work drawn from critical comparison and control.

The relative value of the non-prejudiced view of the application of the knowledge drawn from past medical experience advanced by one year's conclusions is inestimable. Reference to the work done previous to the annual review is only included in so far as its general importance applies to the work of the year. The retrospective aspect of any one division of work demonstrates the inter-relationship and the development therefrom of principles being advanced step by step. The prospective standardization of an entire year's work is perhaps the most beneficial result derived from these reviews. For example, the comparison of one test by a number of authorities under the same condition is the only means of establishing the value of that individual test. This is the only absolute balance upon which hangs the poise of science. And last, the tendencies of future development exhibited by the trend of even one short year's work is a most stimulating influence for the original worker, whether he be the investigator of the laboratory or the progressive clinician. In endeavoring to project these reviews, attempting the above purposes, the INTERSTATE is desirous of fulfilling the present day journalistic obligations as well as meeting the demands of an exceedingly ambitious and rapidly progressive profession.

ORIGINAL ARTICLES.

THERAPEUTICS.

By WILLIAM ENGELBACH, M. D.

This review of the past year's literature intends to consider only the most important contributions on the therapy of the infectious, respiratory, cardio-vascular, gastrointestinal, kidney and blood diseases. Articles already reviewed in this department during the year have not been included.

The most important advancement of therapeutics in the past year has been directed along three lines: (1) The creation of renewed interest and investigation in pharmacotherapy; (2) a more accurate control of the composition and action of therapeutical agents; and (3) a marked tendency to a more simple therapy.

For the last two decades coincident with the rapid discoveries of biologic workers serum-therapy has commanded the attention of the original workers along the lines of immunity and its specific application to the curative treatment of disease. Stimulated by the brilliant results obtained from serum-therapy in a few diseases, investigators have directed all their efforts to apply the theories of serum immunity to the treatment of other abnormal conditions. Granting that the achievements in this line of work have not lagged during the past year, no remarkable discoveries have been noted. With few exceptions the advance in serum-therapy has been more in its application, *i. e.*, the perfection of production, technique and new indications of known serums. Several new communications on anaphylaxis concerning the effect of reinoculations of serum have been brought out by Nicolle¹ and others. These have demonstrated the hypersensitiveness of an organism to a serum with which it has previously been inoculated. The local phenomenon, as described by Arthus, is that the injection of 5 cc. of horse serum, fresh or heated to 56 degrees C., subcutaneously, intraperitoneally or intravenously, into a rabbit every six days the absorption of the liquid becomes gradually slower, beginning with the fifth injection. From the sixth injection there forms locally a thick, whitish, aseptic exudate which persists for many weeks. With the seventh the process becomes that of a typical scar or necrosis and ulceration. This is purely a local process due to the inoculation of the same amount of serum in the same location at regular intervals. Complete anaphylaxis is produced by inoculating a minimal dose of serum, 1-100 to 1-200 mg., into an animal. This one inoculation produces a substance in the blood which has been called anaphylactin, and the rabbit is then sensitized to a larger dose (5 cc.) of the same serum. When this is given two weeks after the initial dose a sensitized animal will either die suddenly with symptoms of exaggerated respiration and convulsions,

or it may apparently recover from these symptoms which are then followed by cachexia. It is evident that this research will have an important bearing upon the future of serum-therapy.

The enthusiasm which has been stimulated by the results obtained from vaccine and serum-therapy has been responsible for the little attention devoted to the cure of diseases by drugs of definite composition or chemical therapeutics. The rejuvenation of investigation in pharmacology is perhaps one of the natural reactions to be expected. The scientific interest which has been produced abroad by the enlivening of the older principles of drug therapy is due much perhaps to the work of Ehrlich, who did so much to start investigation in curative sera. Appreciating the opportunity presented by this great field of investigation, he is now using a large endowment for the experimental therapy of drugs. He with Bechold has already published several important communications (experimental trypanosomiasis) from the Institute of Frankfurt. Other German universities, Freiburg and Berlin, realizing the importance of the revived energies in chemical therapy, have commenced to develop their pharmacological departments. This interest also exists in England, shown by the new laboratory for Cushney, Professor of Pharmacology in the University College, London, for the advancement of experimental pharmacology. Prof. Dixon of King's College has also done much to stimulate interest in pharmacologic standardization of drugs. At least one large English manufacturing house has established a well equipped laboratory for experimental pharmacology and placed it under the direction of well trained pharmacologists. The developments abroad can but impress upon our own universities the necessity of the present time, that of a more thorough training in pharmacology, for the inclination in the past year would indicate that pharmacotherapy will be a subject which is to be rapidly developed. With the exception of the University of Michigan, Western Reserve and University of Chicago, the universities of the country have incompetent organizations in this department.

Better control of remedies has received marked attention in this country through the remarkably effective work of the Council on Pharmacy and Chemistry. This department of the American Medical Association has done a great deal to determine the actual constituents of remedies which have been recommended to the profession. It stands today as an impartial court giving out positive information concerning all the remedies which have been subjected to its investigation. It has already proven of inestimable value and its influence will increase according to the demand made by the profession for its approval of all preparations offered for use. The government Department of Agriculture, in charge of Dr. Wiley, through the enforcement of the pure food law has introduced measures in the past year which will be far-reaching in their indirect influence for a more scientific therapy. The general tendency of the better medical journals to exclude non-ethical preparations from their advertising departments has been brought about by the almost organized fight on nostrums. The movement against this great evil has extended from medical literature into the popular magazines and periodicals. Adams' series of

articles were remarkably fruitful in demonstrating the great danger to which the laity is subjected by the commercial traffickers in human life. The commercial value of discoveries in pharmacy has been so great that pharmaceutical houses have increased to a remarkable number. Many of these institutions exist almost entirely upon the royalties of patented drugs which depend entirely for their sale upon systematized advertising. Nearly all of them have adopted the method of patenting preparations which have been discovered and given to the profession by original investigators. Few, if any, represent any original discoveries for which they are personally responsible. The suggestion of a German investigator that the laboratories making discoveries of important preparations should patent those preparations, would do much to direct the profits made from these patent preparations toward advancing more scientific research.

The delivery from polypharmacy with the employment of simpler physical and psychical means in therapy, as expounded by Thayer,² is one of the most healthful articles of the year. He points out the important changes which have taken place in the practice of medicine as a result of the development of more scientific methods, as follows: (1) The use of drugs the physiologic action of which is understood and can be controlled; (2) the use and development of unquestionable specifics; thyroid extract in the treatment of myxedema, antitoxin of diphtheria and tetanus, vaccines against typhoid, dysentery and plague, preventive treatment of yellow fever, malaria, plague and cholera; (3) the investigations of Ehrlich and his students as to the manner of action of various chemical substances in different infections; (4) careful application of more simple physical and mental methods of treatment. He says: "Everywhere there are signs of reawakening of therapeutic enthusiasm—an enthusiasm based on the fact that the seeds that science has so patiently and sedulously sown are germinating and bringing forth a new therapeutic art born of research and experiment, accurate thinking and reasoning—widely different from the blind empiricism of the past."

Infectious diseases.—An immense amount of work has been published upon the serum treatment of infectious diseases of known etiology controlled either by laboratory (opsonins) or clinical methods. All the reports have been more or less favorable, but the method of administering the serum and the control of the inoculations have varied considerably. The consensus of opinion seems to be leaning towards the impracticability of Wright's method and to favor the clinical method. From his personal experience with Wright's method of treatment, Ohlmacher³ concludes that the proper artificial autoinoculations will produce results in the constitutional and local improvement in many subacute and chronic infections entirely beyond anything previously possible in medicine; that they are therapeutic agents of a specificity and potency exceeding anything heretofore employed in the treatment of disease, except possibly the antitoxin of diphtheria. Potter,⁴ after a very exhaustive comparative estimation of opsonins due to different organisms, concludes as fol-

lows: (1) Wright's method of indicating the opsonic indices in bacterial infections is hardly accurate enough to compensate for the amount of time involved in its application. There is a general parallelism, however, between the opsonic indices and the clinical course of most cases, so that these determinations should be made when the results of inoculation cannot be controlled by the ordinary clinical methods of observation, when there are several organisms present and when the patient does not improve from the usual method of inoculation. (2) Its variation depends upon (a) difference in normal serum, so that even when the counts varied on the average two, three or more supposedly normal sera it is not possible to prevent variations of 10 per cent to 30 per cent; (b) difference depending upon the source of the leucocyte; and (c) differences depending upon counting different areas of the slide. (3) Leucocytes from patients the subjects of bacterial infections do not always agree in the phagocytic activity with those from normal individuals. (4) Inoculation of dead cultures of homologous or heterologous bacteria is helpful or curative in many local infections. (5) It is probable that the response to inoculation can be easily exhausted by too large and frequent doses, and it is very doubtful if advanced cases can be completely cured by inoculation.

Tuberculosis.—Trudeau⁵ points out the possibility of immunizing animals with tuberculin. To a certain degree best results are obtained by the use of living bacilli, although germ-free products and killed bacteria also have some value. Various antibodies are thus produced causing immunity, but as yet no exact measure of the degree of immunity or reliability of the dose of infectious material necessary for its production has been established. Calmette demonstrated that the nature of the process of invasion is dependent upon the number of bacilli produced and the interval of inoculation. Small amounts of bacilli are arrested by leucocytes, whereas large amounts, or repeated inoculations in small amounts, results in general infection. At present Koch's emulsion of crushed virulent tubercle bacilli (tuberculin B. E.) and filtrates of human cultures, such as Deny's tuberculin B. F., are used extensively. Regarding the opsonic index, Trudeau's observations are that, leaving aside the difficulties and sources of error in the determination of the index, as yet it is not established as a reliable criterion of immunity, because opsonins constitute only one of the active bodies produced in immunity reactions. The clinical method aims gradually to produce immunity to tuberculin without demonstrable clinical reactions or disturbance. He points out that it is possible to produce strong immunity to tuberculin without any violent or local reaction. He begins with extremely small doses, .0001 mg. The dose is then gradually increased with intervals of four or five days. If no intolerance develops it may require six months to a year before a high degree of immunity is reached. Immunity is always produced very slowly. If a clinical reaction appears at any time the injections are suspended and later commenced with smaller quantities, gradually increasing. In this way immunization is carried to a dose of 1 cc. with advantage, but this size dose should not be carried on

indefinitely, as the power to resist the effort may be exhausted. Trudeau treats in this way only cases free or nearly free from fever. The more chronic the case the better appears to be the result. From his personal experience he says the more familiar one becomes with the varying course of tuberculosis, the easier it is to realize the difficulty of setting forth any positive evidence as to the favorable influence *per se* of any specific treatment when so many other factors influence the course of a disease, itself so erratic and varying in its manifestations. He points to the evidence of his statistics, however, to show that patients treated with tuberculin during the past fifteen years, from 18 to 25 per cent more were alive than those not treated with tuberculin. Grigoroff⁶ prepared a vaccine by the means of diastases derived from saprophytic microbes of which he found the amylobacter admirably adapted, and related that living or dead tubercle bacilli treated with cultures of the amylobacter became disintegrated so that they readily succumbed to the phagocytosis. Tubercle bacilli thus treated presented both a curative and a preventive action in experiments on guinea pigs and rabbits. He demonstrated that this vaccine had a marked preventive action by the fact that after injection of the infectious bacilli into guinea pigs, the injection of the vaccine never failed to arrest the course of the infection. Of 100 patients Hammer⁷ reports 60 benefited by tuberculin treatment. He commences with .000001 increasing to .00001 and then to .0001 gm. of tuberculin, and so on till in the course of 55 injections the total amount of 5.9 mg is given. His idea was always to keep on the border line of the clinical reaction. Reviere⁸ and many others report very good results, after extended time in many cases, in tuberculin treatment of all forms of tuberculosis with the opsonic determination.

Knopf⁹ describes in detail the very practical appliance of a window tent which allows the patient to be within the room and yet receive the benefits of the fresh air treatment. This is very highly recommendable, especially for the winter season, when one meets with considerable difficulty in getting patients to take the open air treatment. The value of the crusade against tuberculosis which is being made by the present campaign of education is attested by the support which is being afforded by civic, state and national authorities. The value of sanatoriums in the antituberculosis movement is fully taken up by King,¹⁰ who summarizes by saying that sanatoriums afford the tuberculous invalid the most practical and systematic method of fighting his disease, besides acquiring hygienic education in its prevention. In these relationships it possesses a scope and value of vital importance in the present great antituberculosis movement.

The French observers have shown by experiments on dogs that amyl nitrite strongly contracts the pulmonary vessels and that the contraction persists for about ten minutes. Hare reports some 34 cases of his own and of others, in all but one of which amyl nitrite, in doses of from 3 to 9 minims, promptly controlled the hemorrhage. Crace-Calvert¹¹ claims that nitrite of amyl is a most valuable drug in practically all cases of hemoptysis. He says the effect is due to the general low blood pressure

produced by the drug. Inhalation of 3 minims usually checks the bleeding almost at once. Hichens¹² advises in hemoptysis absolute rest in the sitting position, morphine, inhalations of turpentine and the assurance of the patient of a favorable outcome, followed by calcium chloride internally and a saline purgative. If the hemoptysis is persistent or recurrent he recommends nitroglycerin. Butler¹³ states that certain forms of pulmonary tuberculosis react better to arsenic than to any other remedy. It is indicated in those cases with excessive expectoration and slow degenerative processes. It is counterindicated when the cough is harsh and paroxysmal with scanty expectoration and a tendency to hemorrhage. Myer¹⁶ and Stolzenburd¹⁴ report favorable results by the use of Bier's hyperemia in pulmonary tuberculosis, employed by means of a celluloid mass constructed after the fashion of an anesthetic inhaler which fits over the nose and mouth. Inspiration takes place through the nose, expiration from the mouth. It is worn two or three times a day for fifteen minutes, the length of the applications being gradually increased. So far no instance is known in which the mask has done harm. Hemoptysis is not a counterindication for its use,—in fact is less liable to recur by this treatment. It has also been proven to relieve pulmonary circulation in advanced cases of valvular disease of the heart and in obstinate asthma. Its advantages as pointed out by Kuhn,¹⁵ its originator, are that it heals the tubercular foci in the lung and increases the red and white blood corpuscles and the hemaglobin in the blood.

Pneumonia.—Andreas¹⁷ emphasizes the value of hygienic measures and plenty of fresh air in the treatment of pneumonia. Strychnine, whiskey and digitalis are recommended in suitable cases, and the application of cold compresses to the chest and the reduction of the temperature by cold sponging are favorably discussed. Patet¹⁸ reports very favorably upon three cases of pneumonia in children treated with the open air method. Burt¹⁹ recommends the injection of physiologic saline solution, care being observed not to use more than 1 dram of the solution to each pound of the body weight for each quarter of an hour. In conjunction with absolute rest, simple but nutritious diet, an unlimited supply of fresh air and sunshine besides ordinary symptomatic treatment are recommended. Smith²⁰ reports favorable results from personal experience with Galbraith's quinine and iron treatment of pneumonia. He gave from 40 to 70 grains of quinine, as called for by Galbraith, as an initial dose. Cree²¹ concludes that in the symptomatic treatment of pneumonia calcium is a very valuable drug in the hemorrhagic type of cases but not in the dry type, in which class of cases he thinks it is more rational to prescribe citrate of sodium or potassium. In the type of cases in which heart failure is feared, unless there is a special call for calcium, he considers that there are drugs of more value. Edsall and Pemberton²² report the history of five patients who were treated with Roentgen rays for unresolved pneumonia with most excellent results.

Rheumatism.—According to Sherman²³ the results thus far obtained in the serum treatment of acute articular rheumatism are materially shortening the course of the disease; no relapse into the chronic state;

decrease in heart complications; and a distinct tendency to complete recovery. He gives an initial dose of 20 cc. of the serum, followed by 10 cc. every day until the inflammatory condition subsides. In severe cases 20 cc. are given every day. An index of the tolerance of the serum is the amount of local inflammation produced by the serum from the previous injection. If this reaction is marked serum should be given by rectum.

Typhoid.—Bryant²⁴ treated 200 typhoid cases with guaiacol inunctions with only one death in the series. He says the temperature is controlled easier in most cases, patients feel better, skin is kept moist and very rarely does any diarrhea occur during this course of treatment. Gibney²⁵ insists on the use of the paquelin cautery in the treatment of typhoid spine as long as tenderness and pain on movement exists, and he says that it should be employed occasionally after these symptoms have disappeared.

Tetanus.—Noguchi²⁶ believes that the restricted germination and vegetation of tetanus bacilli, which takes place in eosin-treated animals, produce a small quantity of tetanus toxin which, acting locally on the tissues, gives rise in them to a degree of immunity. Specific experiments prove the presence of a degree of general immunity in such animals which in almost all cases is lower than the local immunity. Diffusion of antitoxin from this local area of high concentration into the sera of the low concentration, *i. e.*, the general body fluids, accounts for the general immunity produced. Sutter²⁷ reports three cases of a cure of tetanus after the development of convulsions, and collects twenty-two other cases from the literature. He used the serum locally to the wound and gave 100 units subcutaneously, repeated daily, and 20 units subdurally every other day. Hall, Carter and Howard²⁸ report a case of tetanus successfully treated with antitetanic serum.

Cerebro-spinal meningitis.—Flexner²⁹ reports the production of cerebro-spinal meningitis in monkeys by inoculation of the diplococcus intracellularis. He also reports a cure of this disease in this animal by the inoculation of serum derived from other infected monkeys. This serum served both as a preventive and a curative agent.

Scarlet fever.—Gordon³⁰ believes that in polyvalent antistreptococcic serum we have a remedy of great value in toxic cases of scarlet fever. It is essential, however, that adequate doses should be given, not under 50 cc., and that the serum should be fresh. He has not been able to obtain results with the ordinary antistreptococcic serum.

Influenza.—Broadbent³¹ considers quinine the best remedy in influenza. He gives two grains every morning as a preventive agent during an epidemic. For a cure one dram of ammoniated quinine, 2 drams of liquor ammoniæ acetatis, every hour for three or four hours, is prescribed. The hydrobromate of quinine is given hypodermically for the fulminating attacks of influenza. McCourt³² says that arsenic in alcoholic solution of 1 to 800, given in five minim doses morning and evening, is the most efficient prophylaxis against influenza. From 3 to 5 minims of tincture of fresh root of gelsemium, in 6 oz. of water, given in dram

doses, is considered a specific for this condition when no serious complications are present.

Pertussis and croup.—Sadger³³ reviews the history of hydrotherapy of membranous croup since 1821. He shows that many remarkable cures have been reported by various writers, commencing with Harder. The aim seems to be to induce powerful revulsion by sudden douches with cold water, and he urges a revival of this method. Kilmer³⁴ states that he is convinced, from three years' experience, that his abdominal belt for whooping-cough has been positively beneficial in 95 per cent of the cases.

Plague and dysentery.—Lucas³⁵ adds his testimony to that already given in support of the general great value of Haffkine's antiplague vaccine in reducing not only the incidence but also the mortality of this disease. In their communications regarding experiences in Russia, Skchivan and Stefansky³⁶ report successful treatment of dysentery by inoculation of horse serum from a horse immunized with filtrates of three weeks' cultures of Shiga bacillus. No by-effects were observed and the curative results were most gratifying.

Respiratory diseases.—Forchheimer³⁷ recommends in acute serous effusions cathartics, diuretics, diaphoretics, diet in the form of super-alimentation, the reduction of fluid constituents, as recommended by Tufnells, Hay and Schrott. The latter consists in giving only stale rolls without any fluid. The milk cure has also been successfully applied on the basis of its NaCl constituents. In chronic cases paracentesis according to Trousseau's³⁸ indications; first, when there are symptoms dangerous to life; second, without these symptoms with large effusions; and third, the lack of other methods to reduce the fluid. He agrees with Osler and Delafield that early tapping prevents sequelæ, such as deformities of the chest, bronchiectasis, chronic pneumonia, etc. He calls attention to Doerfler's theory that paracentesis causes an active hyperemia of the lungs and thereby tends to overcome the accompanying tuberculosis. In those cases which are not affected by repeated paracentesis, James and Lewaschew³⁹ recommended an injection into the pleura of an equal amount of 0.6 per cent NaCl solution. This is based upon the principle that diluted serum is more readily absorbed than undiluted. Forchheimer says the injection of iodine has been given up. West claims that incision and free drainage is rarely required, but James believes that should be tried when everything else fails. Regarding empyema, thoracotomy should be done in every case. Although some cases in children get well from aspiration, Bouveret has shown that the earlier the operation is done the shorter the duration. Resection of ribs and extensive resection of the chest walls is recommended by Eslander to finally cure an old pleuritic cavity. Schede, Fowler, Ransohoff⁴⁰ have reported good results from extensive resection of the ribs which have removed the adhesions covering the lungs and allowed it to expand. Frede⁴¹ reports five cases with pleurisy treated with the withdrawal of 1 cc. of pleural effusion which is then reinjected subcutaneously at another point near the posterior axillary line on the opposite side. This was repeated three

times on successive days in acute cases, with excellent results. No other treatment was used and in every case recovery was rapid. In chronic cases 4 cc. or more was used. In tuberculous cases a reaction was present consisting of prostration and rise of temperature during the night following the injection. The author suggests that this reaction might serve to differentiate tubercular from other varieties of pleurisy. Chapin⁴² reports a case of pleurisy with effusion cured by injecting intrapleurally 2 per cent formalin solution in glycerin. Other treatment employed previously had not prevented the reaccumulation of the fluid. For bronchiectasis Chaplin⁴³ concludes that it may be reasonable to suppose that if the patient be given sittings in a creosote chamber that the great danger of fetor would be obviated and thus the life of the patient greatly prolonged. Inmelmann⁴⁴ reports a series of ten cases of asthma treated by Roentgen ray with remarkably good results. The asthmatic attacks were aborted and relief was almost immediate. He exposed the front, back and sides of the thorax in turn, a total exposure of ten minutes. Asthma due to cardiac or nervous factors is not amenable to this threathment.

Cardio-vascular diseases.—No new treatment has been given for acute heart failure, and Bolton,⁴⁵ writing on this subject, reviews the cause of the recurrence of such a failure and outlines the treatment which is usually adopted. Douglas, Barr and Bell⁴⁶ report the cure of a case of malignant endocarditis by inoculations prepared from the organisms in the patient's blood. Kolbeck⁴⁷ says that digitalis seldom if ever should be given in aortic regurgitation which has developed during or after middle life, or if there is evidence of myocardial degeneration. In young individuals, provided complete rest is obtained, digitalis is permissible, especially when there is combined mitral lesion. It should be discontinued before exercise is resumed. Neglect of this precaution might be followed by death from acute dilatation. It is counterindicated in aortic stenosis with cardiac insufficiency. Digitalis is indicated in mitral insufficiency, but in mitral stenosis it can be of no benefit in the absence of failure of the right ventricle. Hewlett⁴⁸ reports a case of heart block from the use of digitalis. Hayes⁴⁹ says that depression of tonicity exhibited by dilatation of the heart, hemic bruits and pulsation of the veins of the neck are all evidences for the use of the digitalis group of drugs. This indication holds irrespective of valvular lesions. He believes also that they should be given until either the result aimed at or the physiologic action is obtained. He combines digitalis with strophanthus and digitalis with squill and highly recommends morphine in all cardiac insufficiency, even those combined with kidney lesions. Rankin⁵⁰ recommends the combination of digitalis with nitroglycerin in aortic diseases. He says that the nitroglycerin prevents the high increase of peripheral resistance, and thus reduces the counterindication for the effect of digitalis in these cases, especially when compensation has failed. Starck⁵¹ announces that the intravenous injection of strophanthin allows the drug to act almost exclusively on the heart, while the dose can be almost mathematically exact and the effect on the heart is always

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amazingly prompt and powerful. He details seven cases in which it was used. No by-effects were ever noticed, although as much as 2.25 mg. were injected in one case in the course of three days. The average dose is 1 mg.; never more than 1.25 mg. The pulse changes almost at once after the injection. Approximately normal characteristics of the pulse, heart and lungs are produced. One patient was in such an advanced stage of pulmonary edema as to be almost moribund, but the injection of 1 mg. of strophanthin induced prompt relief, freeing the lungs and raising the output of the urine from 700 to 3000 cc. in 12 hours. In another case the urine increased from 300 to 3000 cc. in 12 hours. His experience seems to indicate that strophanthin is less toxic than has hitherto been supposed. Brunton⁵² advocates the use of calcium salts when there is a tendency to cardiac failure. Calcium chloride, 5 to 10 gr., dissolved in water, every four hours, produced excellent results in cases of this condition in pneumonia. The salt in the form of lacto-phosphate, or glycono-phosphate, of calcium, was employed efficaciously in cardiac disease. Messalongo and Zambelli⁵³ give the particulars of three cases of severe cardiac defects carefully studied under the influence of dechloridization. Experience with these cases in the review of the literature have confirmed the facts they declare, that retention of sodium chloride is a constant phenomena of asystole in such cases during failing compensation, and is accompanied by edema. Restriction of the amount of salt ingested daily in the food may be sufficient to restore the balance and prevent incompetency of the heart. If this restriction is not sufficient, diuretics and heart tonics will accelerate its effects. The heart tonic and diuretic alone may not be able to display their characteristic action. They gave their patient milk, unsalted bread and unsalted meat, supplemented, in pregnancy, with diuretics. Milk alone contained too much salt and it also introduced too much fluid into the organism. Enriquez and Embard⁵⁴ report remarkable improvement of subjective symptoms in bradycardia after the institution of a free salt diet. Bennett⁵⁵ summarizes the action of Nauheim baths for the treatment of heart disease as follows: (1) A general dilatation of the capillaries and smaller blood vessels of the surface with consequent relief to the ventricular contractions; (2) a slowing of the pulse with more complete emptying of the ventricles; (3) an increase in the tone of the capillaries with probable increase in the force of the rythmical contraction causing additional volume in rate of the distal circulation; (4) a floating upward of the heavy abdominal viscera by hydrostatic pressure; (5) a reflex nervous effect on the cardiac ganglia, whereby the ventricular power is increased and regulated; (6) action of the skin and kidneys is increased; (7) certain beneficial trophic effects in cases of anemia, neurasthenia, osteoarthritis, diseases of the spinal cord, and in some cases of peripheral paralysis. Budinger⁵⁶ has written regarding the very excellent results obtained in the institutional treatment of both acute and chronic heart affections. He ascribes these results to the detailed and individual treatment given each case. Absolute rest and quiet, exact dietetic regulations, hygienic measures and regulated exercises, given strictly according to

indications to be met, are the most important factors to be considered. Wenckebach⁵⁷ reports a case of adhesive pericardium as a result of an exudative pleurisy in pericarditis in which operative interference produced most excellent results. Galli⁵⁸ comments on the importance of absolute abstinence from alcohol in all cardia-vascular affections. He says it is the one single greatest cause for progression of the conditions making cardio-vascular affections dangerous. Klotz⁵⁹ sums up his experiments on arterio-sclerosis as follows: The effect of high pressure drugs, adrenalin, digitalin and barium chloride on the arteries is a degenerative one, undergoing the changes beginning in the media and progressing to the other coats of the artery as previously described by other men. This effect is not abolished by nitroglycerin. Aneurysms are produced as a result of the destruction of the media. These experimental lesions are in every respect similar to the Moenckeberg type of arteriosclerosis. Diphtheria toxins are similar to adrenalin in action on arteries. The changes produced by typhoid and streptococcus infections correspond to the arteriosclerosis described by Jores, with little destruction of tissue cells but a proliferation in the intima and inner layer of the media.

Gastro-intestinal diseases.—Solomon's⁶⁰ careful review of the action of the substitution digestive ferments, and many other combinations of digestents on the market, show pretty conclusively that they are all more or less valueless. He says that it is a rare condition to have deficiency of the ferment in the entire gastro-intestinal tract, that the work of Pawlow and his school indicates that the composition of the digestive juices is modified according to the work which they have to perform and that this adaptive process is very little understood. Much more can be accomplished by the removal of the cause of any modification of secretion than by supplying a deficiency of that secretion, and that when any ferment is given the proper media should be supplied to allow it to be active. Muller's⁶¹ conclusions from his research are to the effect that the best conditions for digestion of albumin occur when the albumin is dissolved in a low concentration and the total bound acidity is low. Increasing amounts of free hydrochloric acid then promote the pepsin digestion to a certain favorable point, which remains constant. In case of high total acidity the same amounts of free hydrochloric acid have no influence on the pepsin digestion, or possibly may hinder it. Faber's⁶² treatment for achylia is that the food should be in such a form as to spare the stomach the task of further division. If intestinal disturbances are present, milk should be avoided. Buttermilk, or whipped cream, diluted with water, can sometimes be taken. Butter and eggs are helpful, but meat and raw fruits should be avoided, and vegetables should be mashed or strained. No dietetic restriction is necessary if there are no subjective symptoms. Pepsin and hydrochloric acid are indicated, but bitters are of more advantage, especially fluid extract of condurango before meals. There is little hope of actual cure, and the aim of the treatment is to keep the condition symptomless. Schmitt⁶³ recommends, among other points of importance in the treatment of ulcer, absolute rest

in bed, which relieves the stomach from traction, pressure, rests the greater curvature and lifts the anterior walls of the stomach out of the stomach contents. If there is any tendency to hemorrhage the patient must avoid all unnecessary movement, even in bed. He applies moist heat, or ice, locally. Diet should be nourishing, with the cautious addition of meat. In case of hemorrhage nothing is given by the mouth, but personally supervised rectal alimentation substituted. Food given by the mouth should be ice-cold milk, meat, jellies, etc. Little⁶⁴ says that with only a few exceptions the remedy for gastric ulcer is confinement to bed, diet and medication. His experience has not warranted him to recommend surgical intervention. Of twelve patients operated on by Eiselberg⁶⁵ for perforation of ulcer, five recovered. He extols jejunostomy after the perforation has been taken care of. It allows the stomach to be left in peace while the patient can be sufficiently nourished from the start. He says the remote results in his experience justify his conclusions that this operation is better than gastroenterostomy. Sutherland⁶⁶ reports two cases of hypertrophic stenosis of the pylorus treated successfully with gastric lavage and diet. A third case, in which it became necessary to stretch the pylorus, resulted fatally. Cheney⁶⁷ reports a typical case of hypertrophic stenosis of the pylorus in which a successful operation was done. Barbat⁶⁹ reports rather favorable results from numerous operations for ptosis of different abdominal organs. On the contrary Nyrop⁶⁸ reports very unfavorably upon the operation of gastropexy for fixation and replacement of the stomach for numerous varieties of gastropsis. The symptoms were usually exaggerated and the anatomical conditions were very rarely relieved.

Kuttner⁷⁰ directs attention to the following points in the treatment of diarrhea. Opium is indicated when the diarrhea is due to the abuse of cathartics, but in dyspeptic or stercoral or parasitic diarrhea, purgatives and helminths are indicated. Nervous and reflex diarrhea demand attention to the underlying affections. Regulation of diet is very important except in nervous diarrhea, in which it does harm. General tonics are useful to improve the general condition of all forms. Schmidt's test diet is the best basis for an appropriate regulation of the diet. In cases of deficiency of gastric juice, hydrochloric acid should be given in large doses; in cases of gastric motor insufficiency with excessive secretion, lavage is recommended. If the cause is located in the large intestine, benefit will be derived from flushing the intestine. Evidence or suspicion of disturbance in the secretion of the pancreas indicates pancreatic extract. Drugs to arrest the diarrhea should be given very cautiously. The most important part is to diagnose the location and cause of the lesion and institution of rational treatment as thus indicated. Kohnstann⁷¹ advises constipated patients to refrain from meat, acting upon the principle that there are some substances among the products of intestinal digestion of meat which have a direct inhibiting effect on peristalsis, or possibly act indirectly by checking the secretion of the intestinal walls and thus render the contents of the intestine dryer, which in turn renders them less susceptible to the peristaltic action of the intestine. Ito and

Asahara⁷² report five cases of multiple tuberculous strictures with three cured from the operative treatment. Partial exclusion with lateral enteroanastomosis was done in three cases, giving a favorable result. One case with resection of 95 cm. of the small intestine succumbed to collapse. Reder has published a case operated on successfully by resection. Mann⁷³ reports nine cases of gastro-intestinal hemorrhage cured by the administration of a tablespoon of a mixture of 2 gm. citric acid, 20 gm. bitter orange peel, 20 gm. fluid gelatin. This has been used successfully in typhoid to prevent hemorrhage, as well as in ulcer and cancer of the stomach.

Renal disease—Marcus⁷⁴ tabulates the findings of metabolism in the patient with chronic nephritis during periods in which she drank ordinary water, and others in which she drank distilled water. During ten days in which she drank distilled water the output of urine was twice the amount voided during the corresponding period with ordinary or mineral water. The specific gravity of the urine dropped to nearly one-half, the total amount of albumin increased a trifle, while the blood became more condensed. The increased diuresis was not accompanied by increase in the amount of solid constituents in the urine. This speaks against von Noorden's conception of flushing out the system under copious diuresis. Peabody⁷⁵ emphasizes the importance of this treatment in case of general anasarca from parenchymatous nephritis with failing heart power, enhanced by the simultaneous administration of heart tonics. He says the value of colonic irrigation and catharsis is a negative one. After complete removal of the edema, he administers progressively increasing daily quantities of salt, carefully watching for any recurrence of the edema. He thereby endeavors to ascertain the exact salt equilibrium for each patient. Gruner⁷⁶ tabulates eight cases of dropsy in children showing the amount of salt in the fluids ingested and eliminated, the specific gravity of the urine, and other details of metabolism. They show the remarkable parallelism between the retention of salt and formation of edema, and a prompt subsidence of the latter under the influence of partial or complete deprivation of salt. Widal⁷⁷ says that dechloridization treatment enables us to combat certain formidable complications. It provides for the excretions from the organism of the chloride and water that clog the organism, and to draw up a regime in which the quantity of chloride ingested is proportionate to the permeability of the kidney for salt. French clinicians have made it a practice to use an exclusive milk diet for scarlet fever. It has been found that the same benefit is practically obtained by restricting the amount of salt in the food. Neither a milk diet nor dechloridization is able to prevent the renal affection, but it has a preventive action against, and also a direct curative action in, scarlatinal nephritis. De Vovis⁷⁹ reported cases of eclampsia treated successfully during coma by unilateral decapsulation of the kidney, and adds five other cases from the literature which were treated successfully by this method. He thinks the high mortality rate of eclampsia justifies the procedure which, so far, has been very successful. Thorndyke⁸⁰ believes that in incipient tuberculosis of the

kidney hygiene and climate should have a chance before the kidney is removed. For the more numerous later cases, nephrectomy should be done in every instance.

Blood diseases.—Houghton⁸¹ reports a case of pernicious anemia treated by lavage through a fecal fistula of the cecum, with irrigations of normal salt solution, of 1500 cc. peroxide of hydrogen, and sometimes permanganate of potash, washed in morning and night. Most of the time a goodly part of the fluid was left in. The diet was practically free nitrogenous matter and gelatin. Notwithstanding the amount of fluids received the stools remained solid. Claim of recovery is based upon the marked decrease of indican and aldehyde in the urine. Rosin⁸² says that hot baths has a stimulating action on the bone marrow. In chlorosis he orders a hot bath of 104 F. about 11 A. M. for about 20 minutes, followed by a cold douche, rub down and rest for an hour. A cool wet cloth is kept on the head during the bath. Three of these are given each week for four to six weeks, at the end of which time he declares the improvement generally amounts to a complete cure. Steinberg,⁸³ regarding chlorosis as an infection of the ovaries and believing that hot mud baths have a very specific action on the ovaries, thinks they are indicated for this reason. He details a number of favorable effects as a confirmation for his assumption. Schubert⁸⁴ relates the cure of a very severe case of malana neonatorum by the subcutaneous injection of 10 cc. of a 2 per cent solution of gelatin daily. Mariagliano⁸⁵ calls attention to the prompt subsidence of the large glands at a distance from the part exposed to x-ray in a typical case of medullary leukemia. The spleen and the glands of the neck were exposed which caused a decrease in all the glands and an improvement in the blood picture. He advises exposure over the neck, liver and spleen. He recommends the limitation of the non-penetrating rays, which have no curative action, while they are liable to affect the skin injuriously. This is accomplished by filtering the rays through diachylon of four layers, allowing more free use of the rays without injury to the skin. In Jacobson's⁸⁶ opinion quinine will check or postpone malarial paroxysms and the plasmodia will be driven out of the blood stream. On the withdrawal of quinine the plasmodia re-enters the blood; hence it is only palliative, not curative, and certainly not specific. He maintains that the withholding of quinine during acute malarial attacks will expedite ultimate cure because nature is given a chance to fight her enemy in the open, unsubject to the galling cross-fires of her own alleged allies. Rudis and Ford⁸⁷ produced an antimalarial serum by the successive inoculation of monkeys and goats with blood containing the plasmodium vivax. This antitoxin, when injected in adequate doses into malarial patients, was followed by the disappearance of the parasites from the circulation and the disappearance of symptoms of malaria. It had no apparent influence on infections caused by a variety of malarial parasites other than that from which it was developed. Mesnil, Nicolle and Aubert⁸⁸ do not state that any of the numerous animals were cured of trypanosomiasis with the various strains and preparations of arsenic. Ehrlich recently announced that this parasite required

an immunity to these drugs after a certain time, but that another chemical might be used against it with primal power, and thus that certain groups of chemicals might be found effectual when a single one would fail. Laveron van Campenhout and Kopke have also reported experiences showing the advantage of combining strychnine with arsenic in the treatment of sleeping sickness. Novy⁸⁹ reviews this literature very thoroughly but does not add any new points regarding its treatment other than that given by authors already mentioned.

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DIAGNOSIS.

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The most important diagnostic advances of the past year consist in the discovery of new aids for the detection of tuberculosis, especially the cutaneous reaction of Pirquet, the conjunctival reaction of Wolff-Eisner and the guinea-pig method of Bloch.

Cutaneous Tuberculin Reaction. Pirquet¹ was led to his discovery by a study of the changes occurring in ordinary vaccination. It is a mistake to suppose that after revaccination no reaction occurs at the site of scarification, an oversight due to the fact that ordinarily the patient is not examined again until after the expiration of a week. If such a case be carefully watched it will be seen that after the expiration of 12 to 24 hours a papule forms at the site of vaccination that soon disappears, leaving behind a small pigmented area. Nothing of the sort occurs, however, in cases of primary vaccination. Pirquet has shown that a similar reaction occurs in tuberculous individuals who are vaccinated with tuberculin. He places a few drops of Koch's old tuberculin, diluted four times, upon the skin of the arm at the usual site for vaccination. By means of a small rotary vaccinating lancet the skin is scarified at this point, thus permitting the entrance of the tuberculin. If the individual is or has been tuberculous a small papule appears within a day or two, at first bright red, then darker in color and vanishing in about a week. There is no general reaction and no pain. The reaction is probably an antibody phenomenon. It has long been known that the tuberculous process so affects the cells in its immediate vicinity, that when attacked by tuberculin they react with the production of a considerable quantity of antibodies. The latter attract leucocytes and lymphocytes so that the tissue is soon in a condition of small cell infiltration. Pirquet's observations indicate that this property is inherent not only in the cells adjoining the tuberculous process, but also in all the other tissues of the body, in particular the skin. Before publishing his results he had tested the method in about 500 cases. He found that nearly all tuberculous children reacted positively, the exceptions being cases of miliary tuberculosis, tuberculous meningitis in the terminal stage and extreme cachexia, conditions in which tuberculin injections too give untrustworthy results. In adults the method is less valuable, decreasing in significance with the age of the patient, because more and more apparently non-tuberculous individuals give the reaction, until after a certain age nearly every one reacts. His explanation is that city dwellers nearly all undergo an infection with tuberculosis at some time in their lives and that the reaction occurs not only in active and in latent tuberculosis but even in perfectly healed cases. In his original communication, Pirquet expressed himself with some reserve as regards the reliability of the test, but at the recent Tuberculosis Conference, in Vienna, he declared the reaction an

infallible indication of the existence of an active or healed tuberculous process.

The method has been extensively tested, especially in the large clinics of Germany, France and Italy, with somewhat contradictory results. In a series of 48 nursing infants so tested, Engel and Bauer² obtained a positive reaction 6 times. Five of these 6 infants were almost certainly not tuberculous; one of them came to autopsy and the other 4 failed to respond to tuberculin injections. On the other hand in a series of 208 older children very satisfactory results were obtained. They conclude that the method is applicable to older children but not to very young infants. Bandler and Kreibich³ used the test upon dermatologic material. It was positive in all tuberculous skin affections except where there was extreme cachexia, but was also positive in a considerable proportion of non-tuberculous cases. Similar results were obtained by most other observers in all varieties of tuberculosis. Among the striking exceptions are Olmer and Terras,⁴ who obtained a positive reaction in only 20 out of 31 adult tuberculous individuals. While the final decision as to the value of the test must be left to the future, the following conclusions seem fairly well justified: Pirquet's test is a trustworthy indication of the presence or absence of tuberculosis in children more than two years old; in adults, a negative test speaks strongly against the presence of tuberculosis, a positive reaction having much less diagnostic value.

Conjunctival Tuberculin Reaction. During the discussion following Pirquet's demonstration of his method in the Berlin Medical Society, Wolff-Eisner⁵ announced a modification of the test consisting in the instillation of one drop of a ten per cent solution of tuberculin into the conjunctival sac. In case of tuberculosis, a more or less severe conjunctivitis, rarely accompanied by a very mild general reaction, was said to result. About a month later Calmette⁶ reported the results of independent work along the same lines. In order to avoid the irritating effect of the glycerine present in tuberculin upon the conjunctiva, he precipitates the active principles of tuberculin with 95 per cent alcohol and redissolves the precipitate in 100 parts of sterile water. One drop of this solution is instilled into one eye of the person to be tested. Within from three to five hours the individual, if tuberculous, will have a marked congestion of the palpebral conjunctiva, which becomes red and edematous. The lacrymal caruncle is also swollen, red, and covered with a slight fibrinous exudate. The inflammatory reaction continues, and at the end of about six hours the fibrinous secretion has increased so as to form a number of threads in the conjunctival cul-de-sac and at the internal canthus of the eye. The reaction reaches its maximum in from six to ten hours. There is no pain, but the patients complain of a slight burning and of a blurring of vision due to the abundant exudate. All signs of the reaction have disappeared by the end of eighteen to twenty-four hours. In the non-tuberculous there is no reaction whatever, or at most a slight redness, which rapidly disappears, and is unaccompanied by lacrymation or a fibrinous exudate.

It soon appeared that a 10 per cent solution of tuberculin as suggested by Wolff-Eisner was often productive of an excessive local reaction, and later observers have nearly uniformly used a one per cent solution, either glycerine-free, following Calmette, or a mere dilution of ordinary tuberculin. The latter seems to suffice since the congestion, occasionally produced by the trace of glycerine, disappears before the real reaction sets in. In France, Comby, Latulle, Petit and others obtained confirmatory results. Citron found a positive reaction indicative of tuberculosis though he occasionally failed to get it in advanced or cachectic cases. His description differs from that of Calmette in that he found the reaction at its height 12 to 24 hours after instillation, the last trace of conjunctivitis disappearing after 2 to 4 days. Schenck and Seiffert⁷ report similar observations. Still more recently Baldwin,⁸ at Saranac, obtained good results with this method. Our own experience with the method indicates that a one per cent solution of old tuberculin is unirritating to the normal eye, that the reaction is specific for tuberculosis, but that some caution must be exercised in the selection of the tuberculin, the product of one of our domestic manufacturers having proven inert. On the whole and in spite of some unfavorable reports it seems probable that the conjunctival method has some points of superiority over the cutaneous inoculation. It is applicable to adults and a positive reaction speaks strongly in favor of the presence of tuberculosis, a negative reaction having less significance. Its simplicity, painlessness and harmlessness serve further to commend it to the general practitioner. A final opinion as to its value cannot yet be given.

Conjunctival Typhoid Reaction. Working along the same line, Chantemesse,⁹ at the recent session of the International Congress for Hygiene and Demography, stated that he had successfully applied a similar method to the early diagnosis of typhoid fever. He uses an aqueous extract of the pulverized and sterilized typhoid bacilli, thus obtaining their endotoxin. A small amount, a half or a third of a milligram, of the toxin is instilled into the lower conjunctival sack. The typho-toxin being a local irritant, the instillation is often followed by some burning, lachrymation and injection, which, however, in a non-typhoid patient disappears within 5 or 6 hours. In typhoid fever, however, the conjunctivitis reaches its height in 12 to 24 hours and persists several days. In 50 non-typhoid patients the reaction was positive only once, in a woman who had had typhoid fever two years before. In 66 typhoid patients the reaction was positive in all, occasionally, indeed, several days before a positive Widal test could be obtained. The conjunctivitis produces very little subjective discomfort and never any unfavorable complications. The method has not yet been generally tested owing to the difficulty of obtaining a proper toxin. Kraus, Luxenberger and Russ,¹⁰ of Vienna, have obtained results that lead them to pronounce against the utility of Chantemesse's method. Further work along these lines is required in order definitely to establish the value of these reactions for diagnosis. It is to be hoped that it will be found possible

to utilize them in other infectious diseases, especially in acute cerebro-spinal meningitis, in which early diagnosis is so important.

Other Diagnostic Methods in Tuberculosis. In the sputum it is usually possible to recognize tubercle bacilli by means of their staining reaction, although even here cases have been reported in which the presence of other acid-fast bacilli has led to false diagnoses. In the urine, however, these other bacilli, especially the smegma bacillus, are so common that it is hardly ever possible to be absolutely certain that the stained sediment actually contains tubercle bacilli. Rolly¹¹ has recently shown quite conclusively, that only by means of the inoculation of animals, especially guinea-pigs, can we positively demonstrate the presence or absence of tubercle bacilli in the urine. This method has, however, hitherto been very tedious. It has usually been necessary to wait two or three months until the animals died of disseminated tuberculosis for fear that, if they were prematurely killed, a slight tuberculous infection might be overlooked. A method recently devised by Bloch¹² has, however, done away with this unpleasant feature. The sediment is injected into the animal's groin. The inguinal glands, palpable as tiny kernels, are then picked up in a fold of the skin and crushed between the fingers. If the injected sediment contains tubercle bacilli, the inguinal glands will within 8 or 9 days have attained the size of a hazel nut and a spread from their cut surface will contain multitudes of tubercle bacilli. Smegma and other acid-fast bacilli apparently do not proliferate in the crushed glands. Joannovics and Kapsammer¹³ have subjected this method to a rigid test. They used emulsions of various strengths of tubercle bacilli cultures and examined the glands 10 days after injection. When the emulsion averaged as many as one bacillus in 48 fields of the microscope, the glands were found macroscopically enlarged and full of tubercle bacilli. Higher dilutions failed to produce perceptible glandular enlargement, but even emulsions containing only one bacillus in 384 fields, the highest dilution tested by them and one in which it would be practically impossible to find the bacilli in a stained spread, produced typical microscopic alterations in the glands and the bacilli were sufficiently numerous to be readily found. Bloch's method thus represents a valuable aid to the diagnosis of urogenital tuberculosis, and it is to be hoped that it will be found applicable to sputum and other tuberculous material. Primary tuberculosis of the guinea-pig can be excluded by a preliminary injection of half a cubic centimeter of tuberculin, which kills tuberculous guinea-pigs without affecting healthy ones. Joannovics and Kapsammer however state that in all their experience, extending over many years, they have never found a guinea-pig affected with primary tuberculosis.

In 1906 Mueller and Jochman described a method of distinguishing between tuberculous and other pus. Small drops of the pus are placed upon Loeffler's culture medium, consisting of beef or sheep's blood-serum to which a little glucose-bouillon has been added and incubated at a temperature of 50°-55° centigrade. Ordinary pus rapidly digests the serum, forming a little depression, whereas tuberculous pus produces

no effect. This is apparently due to the fact that ordinary pus contains polymorphonuclear leucocytes which upon disintegrating set free a ferment that digests the culture medium. Pure tuberculous pus contains no such cells. Kolaczek and Mueller¹⁴ have tested this method in a large number of cases and come to the following conclusions:

1. Pus that fails absolutely to digest Loeffler's serum is certainly tuberculous; if the digestion is very slight it is probably tuberculous.

2. A rapid, extensive digestion of the serum speaks for an acute infectious suppuration, but a tuberculous process cannot be excluded if there is a possibility of a mixed infection or if the tuberculous tissue has been treated with iodoform.

Unfortunately this method cannot be readily utilized by the practitioner, since it requires plates of a special culture-medium (for which, however, the ordinary diphtheria culture-tubes may be substituted) and an incubator set at an unusual temperature. Mueller,¹⁵ however, has substituted a very much more convenient though possibly somewhat less accurate method. A shallow porcelain dish is filled to the brim with Millon's reagent and a drop of the pus is allowed to drop into it. Tuberculous pus solidifies instantly, forms a little skin on the surface of the liquid, and on being immersed contracts into a solid lump without staining the fluid. Ordinary pus, on the other hand, rapidly disintegrates and colors the reagent bright red. The rationale of the test is similar to that of his predecessor. The ordinary pus digests itself with the production of albumoses and similar substances that are soluble in Millon's reagent and give it the color characteristic of aromatic groups. Tuberculous pus is free from such ferments but contains more coagulable albumen. If further work shows the test to be trustworthy it will be a valuable means of determining readily the nature of empyemas, broken-down glands and the like. Doubtless the same restrictions apply to it as to the original Mueller-Jochmann method.

Koch's original method of injecting tuberculin was to begin with one milligram and gradually to increase the dose to ten. Whether or not these doses are unnecessarily large and productive of needlessly severe reactions is still under discussion. In 1905, at the Tuberculosis Congress in Paris, Lowenstein and Kauffmann maintained that a dose of one-fifth of a milligram repeated several times at intervals of a few days sufficed for all diagnostic purposes. The relative value of the different doses has been tested by Roepke¹⁶ on over 700 patients. He came to the conclusion that the dose advocated by Lowenstein was much too small, as it entirely failed to produce reactions in most of the patients with early lung signs upon whom it was tested. He believes, however, that Koch's doses were too large and advocates giving one-fifth, one and five milligrams at intervals of a few days, if no reaction is produced. This gives results as good as with Koch's method with only half the maximum dose. Lowenstein,¹⁷ however, still maintains his position, holding that the dose of one-fifth of a milligram need never be exceeded and that it is only necessary to repeat it four times within

twelve days in order to obtain a reaction in all tuberculous patients. Junker¹⁸ occupies an intermediate position. He uses progressive doses of one-tenth, one-half, one and five milligrams, but states that the great bulk of tuberculous patients respond to the smaller doses. Nearly all recent cases react to the smallest dose. He considers an elevation of 0.8° C. (1.5° F.) in temperature sufficient for a positive reaction. The writer's own experience, while not based on so large a material as that of these clinicians, leads him to prefer Koch's original dosage. At all events the question is as yet not definitely settled.

A Rapid Stain for the Spirochaete of Syphilis. While of great scientific interest, the difficulties attendant upon the staining of the spirochaete pallida have interfered with its routine utilization for diagnostic purposes. Giemsa¹⁹ has modified his technic so that it is now possible to stain spreads of the bloody serum from primary or secondary syphilitic lesions in two minutes. The lesion is scraped with a knife and the exuding serum spread in an even, very thin layer on an object glass. No fixation is necessary unless the material is very fresh, when it should be passed three times through a gas or alcohol flame. It is then stained with a fresh preparation of the Giemsa stain (10 drops in 10 c.c. of distilled water). The fluid is poured over the material and the object glass is held 5 cm. above a flame until it just begins to steam. It is then removed for fifteen seconds. The stain is then poured off and fresh stain is poured over the moist preparation, which is heated again, and again removed from the flame for fifteen seconds. This procedure is repeated four times, leaving the stain in contact with the preparation for a whole minute the last time. It is then rinsed, when it is ready to examine. He adds a number of minor points which enhance the effect, among them the necessity for preparing the stain only just before it is to be used, and refraining from shaking and from the slightest admixture of any acid in the water or clinging to the dishes used.

Tests for Occult Blood in Stomach Contents, Stool and Urine. Schroeder²⁰ has found that the guaiac test for invisible blood is most delicate if the amount of blood present bears a definite relation to the amount of guaiac used. An excess either of blood or of guaiac impairs the delicacy of the reaction. He makes three dilutions of the guaiac. Into the first test-tube he puts 5 or 6 drops of a 20 per cent tincture of guaiac (freshly prepared) and one cubic centimeter of absolute alcohol; into the second, the same amount of alcohol and one drop of the guaiac tincture; into the third, the same quantity of alcohol and a few drops from the first test-tube. Equal parts of turpentine are then poured into each tube, and finally one cubic centimeter of the ethereal extract of the substance to be tested. In this manner one of the tubes will represent the most favorable possible conditions for a blood test.

Einhorn²¹ has modified the benzidin test for occult blood in an ingenious manner. Filter paper is soaked in an alcoholic extract of benzidin and dried. The paper so prepared is immersed in the ethereal extract to be tested and a few drops of peroxide of hydrogen added. If blood is present, the blue color appears promptly.

Holland²² suggests replacing the turpentine or peroxide of hydrogen used in the blood tests by sodium perborate prepared by Schering from sodium dioxide and boric acid. It is perfectly stable and may be had in tablet form. A tablet immersed in water immediately produces a fresh solution of peroxide of hydrogen. The perborate may also conveniently be used as an oxidizing agent in performing the test for indican.

Appendicitis. The subject of the early diagnosis of appendicitis is of perennial interest. Blumberg²³ has made an interesting observation in this connection that may prove of diagnostic value. In the typical case of early appendicitis gentle pressure over the affected area produces pain, which ceases as soon as the pressure is relaxed. When, however, instead of being gradually withdrawn, the hand that exerts the pressure is suddenly removed, the resilient tissues are thrown into more or less vibration, and this in itself may produce a pain which the patient can nearly always clearly distinguish from the original pressure-pain. He believes that this pain, produced by the sudden withdrawal of the palpating hand, is dependent upon the inflammatory involvement of the peritoneum. If it is more intense than the pain produced by the palpation of the appendix, the infection is probably progressing; if less intense the disease is retrogressing. The worst cases are those in which the symptom appears suddenly and with great intensity. Soon after the appearance of Blumberg's article, Ewald²⁴ was able to confirm the value of the procedure and Tretzel²⁵ reported that he had found it very useful. He found it positive in all active cases of appendicitis and also in diseases of the adnexa with peritoneal involvement and in certain cases of gastric ulcer. On the other hand it was absent in all non-peritoneal abdominal affections, and was of no value in advanced cases of appendicitis with exudate or after perforation. In the latter group of cases the procedure may not even be quite free from danger.

Rovsing²⁶ suggests still another mode of palpation in appendicitis. He found that when he made pressure over a corresponding region on the left side of the abdomen, the patient complained of pain over McBurney's point if appendicitis was present, but not in other abdominal affections. His attention was attracted to this by two patients who entered his service the same day with the diagnosis of acute appendicitis. In each the right iliac fossa was so sensitive that he did not venture to test McBurney's point for fear of doing further injury, and the idea came to him to test the corresponding point on the left side. In one patient this elicited intense pain at McBurney's point, the intense pain occurring with lightning rapidity at this point when compression was applied to the middle of the descending colon. In the second patient, although the right side was so sensitive, compression of the left side did not elicit any pain at McBurney's point, even when vigorous pressure and massage were applied to the descending colon. The operation showed the first case to be appendicitis while in the second the appendix and its vicinity were entirely sound, the trouble being a retroperitoneal effusion and perirenal phlegmon. Testing this indirect means of eliciting

the pain at McBurney's point on more than 100 patients during the past two years has confirmed its differential value.

Ileus. Ewald²⁷ calls attention to the importance of early and repeated gastric lavage in all cases of suspected intestinal obstruction, as well for diagnostic as for therapeutic reasons. At a time when the symptom-complex of intestinal obstruction has not yet become well defined, in particular long before feculent eructations or fecal vomiting occur, the stomach contents obtained by means of lavage have a fecal odor. Such stomach contents indeed can be obtained at a time when the existence of ileus can hardly be more than suspected. The procedure, he states, not only permits early operation, but repeated lavage so improves the patient's condition as to make him come to operation in better shape. He fails, however, to take into consideration, as an occasional source of error, the fecal regurgitation of hysteria.

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NEUROLOGY AND PSYCHIATRY.

By SIDNEY I. SCHWAB, M. D.

On account of the restricted space allowed in the review this year, no attempt will be made to give even a partially thorough consideration of the literature of neurology and psychiatry as it may be measured by the papers that have appeared. An effort will be made, however, to indicate some of the newer lines of thought which have led neurologists to follow, if not untrodden, at least the older paths of investigation, with a truer realization of the nature of the problems and methods of arriving at a more satisfactory result. A study of the literature of the year allows of at least one very definite conclusion and that is, that a more than usual intelligent effort has been spent in the study of the functional diseases of the nervous system: above all to the study of hysteria and its allied neuroses. The impulse in this direction noted in the reviews of the past is largely a result of the barrenness in the field of the strictly anatomical side of nervous diseases.

The problems presented by the morbid anatomy of various types of nervous diseases had received their just appreciation from scores of workers in the years that have passed, and they have made the necessary deductions from the end results of diseases, so that the type presented clinically has been brought in relation with the post-mortem appearances in a large number of diseases. This work has been done with a thoroughness and a care that has probably never been equaled in a similar line of investigation, and it may be said now, with a certain amount of conviction, that the neuropathologist awaits the improvement in technique and in the knowledge of the physiology and anatomy of the nervous system which will make further progress a definite possibility. There is given in this way an opportunity for the study of the functional diseases which has attracted some of the best minds. In consequence, we have before us a stimulating series of papers dealing with the study of the genesis and the development of hysteria, neurasthenia and other neuroses, which open for further study a host of attractive possibilities. The meetings of the French and, to a greater extent, the German Neurological Societies have been taken up with the discussion of hysteria from the point of view of the later theories. The aim of this kind of work is to disentangle the subject of hysteria from a purely symptomatic conception, that is presenting certain types to that of a definite morbid condition whose laws of development and origin can be understood. It was formerly the main effort of writers on this subject to fix, in as many ways as possible the lines which made the diagnosis of hysteria certain when compared to organic diseases. It is now the effort of investigators to establish hysteria on a firm basis, which shall include the various symptoms, not from the point of view of their differentiation from other symptoms, but as they originate from a morbid mental state. This physiopsychological tendency may be said to be the most significant as-

pect of the work on this subject that has appeared during the year. The publication of Janet's lectures on hysteria, which were delivered before the students of Harvard University, and the various papers which the discussion of his point of view has inspired, may be regarded as presenting this tendency in the most striking way. As opposed to this view may be mentioned Babinski's insistence that hysteria is merely a collection of symptoms which persuasion can remove and which suggestion causes. Freud's reiteration of the etiologic factors concerned in its production brings out the varied phases of the whole subject in such a way that there is place for all sorts of investigations from this triple standpoint. Janet's lectures and the papers belonging to that conception make an illuminating phase in the study of hysteria and its morbid phenomena. Mention must likewise be made of the work of an American student of the subject, Prince, who has developed further than has anyone else, perhaps, the point of view of the value of the dissociation element in the causation of hysteria and likewise of neurasthenia, and the name of dissociation neurosis is one met with in many places. One conception of this view deserves mention from its novel suggestiveness. Prince holds that in certain cases of hysteria the neurasthenic symptoms, or perhaps neurasthenia, may be viewed as a symptom of hysteria. Whatever the faults of this idea may be, the point of view is worth considering, especially in that common class of patients in whom the two diseases are met with together. No one hesitates to admit that this is often the case. It must not be lost sight of that Dercum many years ago advanced the idea, whether original or not with him, that neurasthenia is strictly a fatigue neurosis, and that all the important symptoms presented by this disease may be interpreted from this point of view; especially the various parasthesias and painful subjective sensations. These wrongly interpret normal sensations which, in fatigue states, transcend the limits of normal painful experiences, giving a clue to understanding much that has been scarcely appreciated in this disease. With this broader conception of the neuroses, presented very inadequately by these few remarks, there seems no doubt that in the next few years the more intelligent physicians, who deal largely with this class of diseases, will find much that will illuminate the subject. There is no better way to illustrate what is being done in this field than to quote Janet's definition of hysteria, given in his lectures. It may be stated by way of explanation that Janet himself deprecates the attempt to define any subject, the whole of which is not better understood than is hysteria. For him, hysteria may be regarded as a form of mental depression characterized by the retraction of the field of personal consciousness and a tendency to the dissociation and emancipation of the system of ideas and functions constituting personality.

In the field of organic diseases perhaps no work deserves more attention than the effort on the part of Robertson and his associates to further develop the idea that dementia paralytica and tabes are caused by a specific organism, the discovery of which might lead to the possibility of a curative serum. Towards the accomplishment of this end these in-

investigators have used every means which scientific research affords, and have brought to bear all technical methods at their command. As a result, a protective serum has been found which, in animal experiments at any rate, has seemed to accomplish something. In their trials upon individuals suffering from dementia paralytica or tabes, the effect of the serum has been more problematical. There has been some improvement, it is true, but it seems questionable whether the improvement can be laid to the effect of the serum, at least in a specific sense. The antiserum is prepared from the particular diphtheroid bacillus present in each case. This is interestingly shown in a case of tabes dorsalis where the improvement in the usual symptoms of the disease was very marked. Whatever may be said of the work itself, nothing but praise can be said of its quality. Each publication by the authors shows an increasing amount of important data on the bacterial side of this disease. The question to decide is whether the organisms present, and upon which most of the work has been done, is really a specific organism for this disease; the authors, with all their work, have not satisfactorily answered this question.

It is instructive to note the growing tendency of investigators to plan an extensive piece of research and follow it out until some definite conclusion is reached. In this way we have to indicate from year to year the progress of such a line of inquiry. A good example of such work is the continuation of Row's and Orr's study of the importance of the lymph circulation in the diseases of the spinal cord. This throws much light on the mechanics, if it might be so called, of toxic substances acting on the central nervous system. The conclusion of their early studies was that the starting point of degeneration of early tabes and dementia paralytica was in the intramedullary position of the sensory fibres as soon as the neurilemma sheath disappeared. This point was noted in a former review of their work. In the study mentioned here, they have supported their first contentions by a great variety of experimental observations and deductions from post-mortem findings. Some of their conclusions are strikingly interesting. For example, they believe that in the peripheral and cranial nerves there is a constant stream of lymph ascending towards the central nervous system whose main current lies in the inner meshes of the lymph spaces of the fibrous perineural sheaths. Toxins reach the brain and cord by this channel. In their extramedullary portion, these nerves are protected from the influence of the toxins by the vital action of the neurilemma sheath, but on losing this in their intramedullary part, they at once undergo degeneration. The first change is a primary degeneration of the myelin. The axis cylinders and nerve cells are evidently affected later. Something of the same kind of problem is taken up by Buzzard in the Gulstonian lectures before the College of Physicians in London. He has given to his work the rather vague term, "On Certain Acute Infective or Toxic Conditions of the Nervous System." Under this he includes all cases of acute paralysis. The motor paralysis must present good grounds for the belief that it is of infective or toxic origin. The following are to be considered typical of

this class of diseases: Acute anterior poliomyelitis, Landry's paralysis, acute toxic polyneuritis, acute ascending or diffuse disseminated myelitis. His conclusion is of interest. He shows evidence that there are four different kinds of acute paralysis; that there are clinical and anatomical points by which they may be differentiated, and finally, but by no means conclusively, that acute poliomyelitis is an acute specific fever in which the nervous system is attacked through the circulation; acute ascending myelitis, a spinal lymphangitis; Landry's paralysis, a species of spinal lymphatic intoxication, and toxic polyneuritis, a toxemia producing a parenchymatous degeneration of the lower motor neurones.

The publication of the third volume of the Archives of Neurology from the pathological laboratory of the London County Asylums will bring forward again the excellent work done there under the direction of Mott. Besides a number of papers by the director, there are a number of notable examples of clinico-laboratory investigations of the most advanced character. It is to this side of the question which the work done in the laboratories at Clayburg chiefly relates. The clinicopathological method of investigation receives here its best example. There is one paper among the collection which is selected for mention, not alone on account of its excellence, but, likewise, because it is in line with some of the most important work which has appeared during the year. It is significant that syphilis of the nervous system has received more than usual attention, not alone from its clinical aspect but from the diagnostic view. The discovery of a special specific reaction in the cerebrospinal fluid of syphilitics will be referred to later. The paper quoted in this connection is by Mott and touches upon the changes found in the nervous system in cases of trypanosome infections. Of special importance are the relations of such lesions to syphilitic lesions of the nervous system. Inasmuch as syphilis is pretty well believed now to be the result of a trypanosome infection, and sleeping sickness and dourine are due to the same character of organism, a comparison of the lesions found in the two diseases ought to be instructive. This paper is an absolutely unique one, in that no such study of the nervous tissue in such diseases has ever before been attempted.

To illustrate the wealth of material used in this investigation, it need only be mentioned that twenty-five cases of individuals dying from this disease, and the tissues of monkeys inoculated with blood from spinal fluid of patients dying of this disease, were used. The similarities in the tissue changes of syphilis and those of sleeping sickness are sufficient to indicate, at least, that there is no obstacle in the way of believing the hypothesis that both are due to the invasion of an organism of the trypanosome class.

The most important piece of work from the standpoint of etiology and, to a less extent, of diagnosis, is that which has been directed toward the discovery of some specific reaction or substance in the blood or spinal fluid by which existence of previous syphilitic infection might be ascertained with some degree of certainty. The importance of such a discovery need not be dwelt upon here. It must be patent to everyone

that if it were possible in any case of tabes or dementia paralytica to say with exactness that a previous syphilis had existed, the question of the specific origin of these two diseases would be largely solved. The dependence upon the statistical method for the proof, or the reverse, of the syphilis theory of tabes and dementia paralytica has led to endless dispute. The discovery of the specific reaction and the presence of specific antibodies in the spinal fluid of patients with syphilis is largely due to the researches of Wasserman and his pupils. A number of preliminary papers have appeared testing the correctness of his assumptions in cases of dementia paralytica and tabes. Plaut, Morgenroth, Stertz, to mention only a few, have found a striking percentage of the occurrence of the specific reaction and the presence of the two diseases. In the examination of the spinal fluid in individuals who did not have these diseases, and in whom there was no special reason for suspecting a previous syphilis infection, the reaction was not found. In Stertz's paper, for example, all of the eight cases of dementia paralytica examined show the reaction positively. Of course, it is too early to determine with exactness either the correctness of Wasserman's theory or its relation to syphilitic diseases of the nervous system. It is necessary that a larger statistical material be at hand. It seems very likely, however, that we have now a method that will eventually determine the burning question of the relation of syphilis to tabes and dementia paralytica, and likewise have at our hands a ready method of deciding in doubtful cases whether the group of symptoms present are due to syphilis. The importance of the latter aspect of the case can not well be exaggerated, because there is no doubt that at present there is much error on both sides, useless antisiphilitic treatment and its neglect in suitable and perhaps favorable cases.

There has been an unusual activity shown in the study of epilepsy in the past year. Some of this work seems highly significant, not so much as promising an early solution of the complicated problem presented by the diseases, but rather suggesting that further study will no doubt always bring something that will increase the aggregate of our positive knowledge. It must be remembered that epilepsy presents to the pathologist, as well as the clinician, an unusually favorable field for study. In the first place it is probably the most common organic disease of the nervous system. It can be produced experimentally on animals, its post-mortem material is unusually plentiful, and lastly, it is a favorable territory for surgical intervention. So that from every point of view we see this disease in large numbers. There are at least three ways of looking at it from the pathologic point of view. We may assume that there is specific pathologic change as a result of the disease, we may assume that there is an abnormal state of the blood vessels or in the circulatory mechanism in the brain, or we may believe that there is contained in the circulating blood some substance which, when brought in contact with the anatomical elements of the brain, causes the symptoms now known as epileptic. Each of these points of view may be illustrated by papers appearing during the year. Ceni, who was the first investigator who did serious work on the toxic blood theory, claimed to have dis-

covered a specific immunity reaction in the blood of epileptics, by which an individual suffering from the attacks could, so to speak, immunize himself with his own serum. He still holds that view. He says that animals immunized with epileptic blood serum that is hypotoxic for man suffer no inconvenience. Animals who are submitted to a process of immunization with the epileptic blood serum that is hypotoxic for man die rapidly. The intoxication, however, presents nothing that is common with the phenomenon of epilepsy. It can be said of this work that it has not received the agreement of other workers in the same field. However promising the outlook might seem theoretically, there does not appear to be any likelihood that epilepsy is purely a bacterial or toxic disease in the sense used in Ceni's investigations. Sala now considers epilepsy strictly from the pathologic point of view, that is the point of view that is concerned with specific tissue changes. He examined the brains of ten epileptics with the greatest care and with all the newer technical methods. He gave especial attention to the findings in the cortex and in the ammon's horn. A number of definite changes were found chiefly in the matter of neurological hypertrophy. He concludes, however, that none of the changes found is at all characteristic or specific of epilepsy, but may be found in many other morbid conditions and even in simple senility. It is probable that they are all produced secondarily to the circulatory disturbances mechanically produced by the attacks. In cases of epileptic idiocy, however, no doubt some of the changes, particularly the glia overgrowth, may be ascribed to defect in development.

Turner, whose work on the causation of epilepsy deserves close study, contributes two articles which are of very great interest. He holds the theory that epilepsy is caused, or rather is a disease occurring in persons with a defect in the nervous system, either congenital or involutional, and in whom also there is an abnormal state of the blood, characterized by a special tendency to intravascular clotting, and that the fits, whether of grand or petit mal, owe their exciting cause to sudden stasis of the blood stream in some (generally limited) portion of the cortex, resulting from the blocking of cerebral-cortical vessels by these clots. Forty-one cases of epilepsy were examined microscopically, and the thesis was defended on the score of the findings in this large material. Now, a further step in the proof of this theory naturally is that the blood of epileptics be examined while alive, to determine whether there existed anything so abnormal as this. In a paper entitled "The Coagulation Rate of the Blood in Epileptics," Turner further attempts to strengthen his position. Nine epileptics were carefully studied with the idea of determining the coagulation rate, the blood pressure variations, and other data in the circulating apparatus. It was shown that the observations confirmed the previous ones, and demonstrated that, as compared with persons in good health, the blood of epileptics coagulates in a shorter time, and also that this is more marked just before or during the fits than when the patient is free from them. Against the criticism that this might have been caused by the fits themselves, there is a series of observations taken some time before the fits. From many points of view, this is an important observation.

It establishes a certain set of facts which simply wait for further confirmation to justify some attempt to use therapeutically some of the data. To attack the therapeutic problem of epilepsy from the point of view of coagulability of the blood would certainly arouse more enthusiasm than the therapeutics of this disease seem to offer on more classic and usual lines.

Some notice must be taken in this review of the question that has been agitating the neurologic mind since the paper of Marie on the subject of aphasia appeared. This paper had for its object the demonstration that Broca's aphasia, the so-called motor aphasia, had absolutely no right of existence, and that the divisions of aphasia into the sensory and motor types was not borne out by the facts. As is well known, the original theory advanced by Broca was based upon two autopsies, neither of which today would be accepted as definite proof of the theory advanced by him, and as is known was not altogether believed even by himself. A number of papers have appeared on the subject. It is difficult to select any that can be taken as typical of the points in dispute. Marie himself contributes several papers, in one of which he relates the history of Broca's discovery and the origin of the theory attributed to him. Dercum, in a paper entitled "Marie's Views on Aphasia," refers to fourteen cases of aphasia which he examined to test Marie's conclusions. He finds that in all these cases there is evidence of the mental defect so prominent a sign in the cases cited by Marie. He concludes that in the main Marie's criticism of the Broca theory is tenable, and says further that there is much doubt concerning the specific activity of the third frontal convolution, the so-called Broca center. Dejerine, on the other hand, brings evidence in support of the old contention. He describes two cases of motor aphasia, in which the lesion is sharply confined in the anterior part of the speech center, that is, Broca's area, without implication of the operculum, the motor convolutions, the temporal lobes, or the basal nuclei. It can be readily seen that the question is still very undecided. There seems to be no doubt, however, that Marie's position is taken deservedly and that his observations will awaken new interest on the subject and lead to a careful revision of the whole subject from the point of view of actually observed cases. If this newer aspect of the aphasia question will lead to its simplification, it will have done a merited service. There is no subject perhaps that is so open to the whims of the individual's taste in diagrammatics as that of aphasia. It does seem reasonable that so complicated a function as that of speech should not be separated into such artificially constructed divisions as a motor and a sensory function. It must have, in either of these assumed divisions, a mental element that no doubt lies at the foundation of the whole faculty of communication, whether by that of formal speech or in the less developed methods seen in the lower animals and the less advanced members of the human race.

In devoting some space in this review to the consideration of the more strictly clinical papers which are of some importance in the work of the year just passed, it might be worth while to glance, by way of intro-

duction, to a very remarkable paper by Head on the afferent impulses within the spinal cord. Mention is made of this paper for two reasons, first, because the conclusions arrived at are important, and then because it illustrates the best method now possible for the study of the intricate problems of neurophysiology. Head is essentially a clinician; that is, he views the problem presented by neurology largely from the point of view of its applicability to an individual case. He sees in the case itself the key to many a problem for the solution of which there can be no satisfactory animal experiments. It is readily seen, for instance, that all the problems concerned in the phenomenon of consciousness cannot be approached from the animal experiment point of view. In its large significance this would include all the finer data of sensory responses to various kinds and degrees of stimuli. Head uses then the material that is presented in a rich neurological service at his hospital and is enabled, through the care of his examinations and the avoidance of the more usual errors, to arrive at conclusions that seem to resist all attempts at criticism, that is from the technical point of view. Of course, one may differ from the conclusions as much as one chooses, but in the establishment of the data Head's position seems well-nigh invincible. The problem presented to him was somewhat as follows: He had established the fact that in the peripheral mechanism of sensory response there were ready at hand three separate systems: the epicritic, the protopathic and that of deep sensibility. When the impulses served by this mechanism reach the spinal cord, there is a change, and it is this change which Head studies with a view of grouping the sensory impulses in the cord and determining at what level the change occurs. Seventeen cases form the material. There were cases of spinal injury, paralysis of various sorts, and organic diseases of the spinal cord with sensory functions affected. The care and ingenuity by which the sensory examinations are made are beyond criticism. They form a model which all studies of this nature must reach to be considered as at all adequate. Some of his important conclusions are as follows: The spinal cord is the seat of the transmutation of most of the impulses of the peripheral into those of the secondary level of the afferent nervous system. This transmutation and recombination takes place on the same side by which the impulses enter the spinal cord. The secondary paths for sensory impulses then cross with greater or less rapidity, so that ultimately all those subserving the sense of passive position and movement and tactile discrimination have passed to the opposite side within the limits of the spinal cord. Even these sensory impulses cross after reaching the nuclei of the posterior columns.

There is to be observed in the literature of spinal cord tumors a very interesting lot of observations, especially from the point of view of operative success. Oppenheim's series of papers with Borchardt, in which the surgical side is emphasized, show a surer grasp of the topographical localization problem. There is little doubt but that the tendency that prevails today is rapidly approaching the idea that an exploration of the cord is justified in every case in which there is present a group of symp-

toms pointing to a locally acting lesion in the cord. If the effects of this lesion tend to increase within a legitimate focus of its anatomic capacity, then the suspicion of tumor is so strong that the cord should be inspected irrespective of the probable character of the tumor, or its location within the substance or external to it. Neither of these latter points can be accurately determined. An important observation has been made in respect to the symptomatology of spinal cord tumors, and that is that there can be present a tumor of the cord, or even of the dura, without pain. This is important because pain has been considered the cardinal symptom. After all the group of symptoms pointing to the localization of the process, its restrictions anatomically and the prominence of the focal phenomena and their tendency to increase or spread according to location, are the primary marks of a tumor of the cord. An important and interesting advance has been made and in the operations on the pituitary body tumors. These have been regarded for a long time as being beyond the approach of surgery. Eiselsberg reports a case of successfully operated tumor of this region with the usual symptoms of acromegaly. The interesting thing to consider in this connection is not so much the operation and the removal of the tumor as the possibility of affecting favorably the optic nerve atrophy which is so frequently a complication. The question to be considered in this class of cases is the justification of submitting the patient to so dangerous an operation, and one which by its very nature will always be dangerous or be satisfied with the relief of the most formidable results of the tumor of the hypophysis which, of course, is the progressive blindness. An important point in the symptomatology of cerebral tumors is mentioned by Schultze, and that is the presence of arteriosclerosis of the brain and the masking of the tumor symptoms by its presence, or by causing itself symptoms which, in some cases, strongly point to the presence of tumor. It might be suggested in this connection that some of the cases of the so-called pseudo-tumor cerebri may have been cases of arteriosclerosis of the brain, in this way showing a comparative negative finding post-mortem, or when the cerebrum was exposed in the course of the operation. In the domain of clinical neurology there have been reported a great number of interesting cases that serve to throw light on the obscurer phases of disease types. An interesting example of this sort is the report by Oppenheim of a case of multiple sclerosis in the conus of the cord. Oppenheim suggests that there are probably numerous cases which are diagnosed as spinal syphilis which are really multiple sclerosis, and he calls attention to the fact that so frequently cases of this kind are forced to submit to a long period of antisyphilitic treatment under the mistaken notion that every case of spinal cord disease which does not fit in with some conventional type of disease is regarded as syphilis.

The subject of meningitis has received a great deal of attention, perhaps more than usual, on account of the renewed interest following what seems to be a favorable result in the serum treatment. Serous meningitis is the subject of an instructive paper by Riebold. He holds that it is a more common affection than is usually supposed. It is often

found as the expression of the hydrocephalus consecutive to an infectious disease. The only means of diagnosis is the examination of the spinal fluid, which in serious meningitis is sterile, containing only a few lymphocytes. The question that immediately arises in this procedure is the danger of spinal puncture in suspected cases of brain tumor, especially if the tumor might be located in the cerebellum and if it is in children. Meningism, that puzzling symptom complex which so often leads one astray in cases that apparently are typically meningitic, is treated by Tylecote. He defines it as a functional condition caused by the selective action on the meninges and cerebral cortex of toxins circulating in the blood. The possibility of this should never be forgotten, especially in doubtful cases, and the prognosis must be governed by such a chance. There is probably no definite means by which the differential diagnosis can be determined. A peculiar case is described by Lejonne Offert of unilateral paralysis of the cranial nerves. This was a case of neuritis. Such a case might have well been considered to be the expression of a basal syphilis. The unilateral localization of a polyneuritis with so extensive a distribution is certainly atypical enough to suggest that the possibilities of neuritis are very manifold.

It is quite impossible to attempt a just review of the work in clinical neurology other than to briefly mention a few cases of unusual interest. This is done merely to accentuate the idea that the informed clinical neurologist is becoming less and less impressed with types and more and more concerned with the interpretation of symptoms as expressions of definite reactions of the nervous mechanism to localized, limited, or widespread pathologic lesions. That there is a steady improvement in the methods of obtaining the data necessary for such an interpretation is evident from any consideration of the literature of a year. Certainly the year just passed is no exception to the record of other years. It has been the object of the review this year to show something of this in an abbreviated form. That so much more exists to mention than can be touched upon in this brief attempt at summing up, is to be regarded as the best possible proof of the constantly increasing activity in the effort towards the elucidation of the problems presented by diseases of the nervous system.

PEDIATRICS.

By ALFRED FRIEDLANDER, M. D.

Feeding of Infants. Bunge¹ continues his discussions as to the increasing inability of mothers to nurse their children, and the causes therefor. He holds that a healthy man, who wishes healthy children, should not marry a girl who was not nursed by her mother, a daughter of a tubercular family, a girl with a psychopathic taint in the family, or the daughter of an alcoholic. Morquio² has studied the disorders arising from breast milk. He divides them as follows: Intestinal colic; simple vomiting; gastro-intestinal dyspepsia; and infectious intoxication. It is impossible, he holds, to establish any relation, from the general point of view, between the examination of the milk and the degree of its adaptability to the needs of the particular infant. Westcott³ suggests that in difficult feeding cases a small portion of human milk be added to the cow's milk mixtures. He has found the plan of modified wet-nursing very effective.

It is becoming realized more and more clearly each year that accurate percentage feeding does not answer all requirements in difficult cases, and that in ordinary cases, including therefore the vast majority of all artificially fed children, it is an unnecessarily complicated system. It is noteworthy that it has never found favor anywhere outside of America at all. Evidence is being adduced all the time, too, to show that the American theory of the undigestibility of the proteids of cow's milk is not tenable. At present it is being claimed that the fats cause much more disturbance than the proteids.⁴ Brenneman⁵, in a very suggestive article, points out that much harm is done to infants, especially in this country, by overfeeding; that the percentage method is inadequate to prevent such overfeeding. He, too, believes that the fats often cause much trouble, even going so far as to maintain that it is never necessary to give more fat than proteids of cow's milk. Neumann⁶ believes that while excess of fat may do much harm, excess of proteids may cause equally great disturbance. He believes that there is also a "salt" disturbance, as a result of which spasmophilia may ensue. In order to guard against the dangers of overfeeding, it is generally suggested that the caloric values of milk mixtures be estimated^{7, 8}. It is generally conceded now that, at least during the summer months, all cow's milk designed for infant food should be pasteurized and that such pasteurization should be done as soon after the milking as possible^{9, 10}. Lewin¹¹ reports five years of unfailing success in infant feeding with undiluted cow's milk. He gives cow's milk undiluted, after the fourth week, adding merely milk sugar. His results have been excellent.

Various authors^{12, 13, 14} report very good results from the use of buttermilk mixtures, and milk mixtures acidified with lactic acid bacteria. Hussy¹⁵ has made a series of experiments with dried milk

powder, which appears to be a good surrogate for cow's milk for temporary use.

The value of goat's milk as a food for infants is being recognized more clearly all the time; for one reason, because of the fact that the goat is not so susceptible to tuberculosis as the cow.¹⁶ It is possible that the reintroduction of the goat on a moderate scale may thus come about.

Diseases of the newly born. Melaena.—Shukowsky¹⁷ has observed 29 cases in his own practice with a mortality of 62 per cent. In 14 of the fatal cases the autopsy showed lesions of syphilis. Gelatin helped in some of the cases, so did the sesquichloride of iron. In some cases, gastric lavage, with cold physiologic salt solution, seemed of benefit. Keller¹⁸ finds on examining the vital statistics of Berlin during 1904-5, that 2 per cent of the total mortality is due to umbilical infection during the first days of life. He also takes the rectal temperature of all newborn infants twice a day so as to detect infection in its incipency.

Edema. d'Astros¹⁹ says that simple edema is very common in premature infants, usually beginning in the lower extremities. In other cases edema of the newly-born is due to acute infection of septicemic nature. The kidneys are usually involved, and in this form there is albuminuria. Certain chronic infections, notably hereditary lues, can also produce edema in the newly-born, and so can certain grave digestive disturbances.

Engorgement of the thyroid. Fabre and Thevenot²⁰ report four cases of engorgement of the thyroid in the newly-born. It is probably provoked by compression during labor. Rupture rarely occurs, though sometimes there may be interstitial hemorrhage from rupture of the vessels.

Specific infectious diseases. Discussing sudden death in the acute infections, Czerny²¹ says that it is due to two factors—anomalies of the nervous system and over-nourishment. In scarlet fever epidemics, he finds that the highest mortality occurs in the better classes in whom over-feeding is more prevalent. Overfed children show lowered power of resistance to disease and are especially exposed to the danger of heart failure. This applies particularly to children of psychopathic families. With reference to the early diagnosis of the specific infections, Vipond²² says that he makes it a rule to examine the lymphnodes in children with fever and absence of localizing signs. He finds the glands enlarged in all the infections, often long before the advent of localizing signs. The glandular enlargement is more marked in erysipelas, measles and rubella than it is in scarlet and pertussis. He believes that in all infections (except local ones) the toxin enters the system through the tonsils. Rotch and Low²³ have made a series of blood cultures in children; 680 children under the age of 13 were examined. The younger the child, the less the likelihood that blood cultures will be possible. In the second four years of life the authors found cultures possible in 72 per cent of the cases. The method is so simple and yields such good results that it should certainly be tried in doubtful cases.

Scarlet fever. Interesting results as to the question of the etiology of scarlet have followed the study of the streptococco-opsonic index in scarlet.²⁴ Judging from the variation in the index a scarlet fever patient is, from the beginning, the subject of a definite streptococcus infection. This result is in full harmony with the outcome of bacteriologic studies of scarlet fever. The claim that scarlet is a streptococcus disease pure and simple is, however, hardly warranted in the present state of our knowledge. Discussing functional heart disturbances in scarlet, Troitsky²⁵ says that the intensity of the epidemic and the severity of the disease do not have immediate influence on the intensity of the functional disturbance. These functional disturbances, while not directly dangerous, are liable in time to interfere with the child's physiologic, physical and mental development. The murmur at the apex and arrhythmia of various kinds are the signs of functional disturbance most frequently seen. Schick²⁶ reports a number of cases to show that post-scarlatinal nephritis and lymphadenitis never develop before the 12th day and may not appear until the 6th week. Other post-scarlatinal affections are a remittent fever of undiscoverable cause, also endocarditis, rheumatic affections and relapses of the scarlet fever. Bingel²⁷ describes 8 cases, showing beginning degeneration of the liver from scarlatinal infections, with evident efforts on the part of the organism to repair the damage. Biehler²⁸ reports 4 cases of perforating ulcer of the palate in the course of scarlet.

With reference to the dietetic treatment, the French clinicians, especially, have paid much attention to the salt-free diet. It is known that in nephritis the elimination of the chlorides is interfered with, and on the other hand, that anything that throws increased work on the kidneys tends to favor the development of a nephritis. Restriction of salt, therefore, not only has a preventive action against, but also a direct curative action on scarlatinal nephritis.²⁹ Roger³⁰ reports excellent results from the use of chloral given in doses sufficient to produce light somnolence throughout the febrile period. Of 800 cases so treated, 5.5 per cent had nephritis; of 756 treated by other means 7.76 per cent had nephritis. No explanation of the action of the chloral is offered. Opinions as to the value of the Moser polyvalent serum, in the treatment of scarlet, still vary^{31, 32}. In the severer cases it seems to be of benefit, especially in the toxic cases.³³

Diphtheria. Marfan³⁴ reviews the statistics of the Hop. des Enf. Mal. (Paris) for the past five years. The figures show a constantly diminishing mortality, both total and net (excluding cases moribund on admission). Marfan concludes that the mortality of diphtheria depends upon the frequency of the malignant anginas; on the number of laryngeal cases; on the number of cases of broncho-pneumonia; especially on the number of cases with coincident measles. The greatest factor, however, in the reduction of mortality is the early use of serum. Discussing relapses in diphtheria, Rolleston³⁵ finds that they occur in a little more than one per cent of the cases (1300 cases in five years with 22 relapses—1.67 per cent.). They do not occur before the third week and are to be

distinguished from scarlet fever and late tonsillitis. They are usually milder than the original attack, and comparatively small doses of antitoxin are required for their treatment. Pennington³⁶ found bacilli corresponding morphologically with Klebs-Loeffler in the throats of 10 per cent of a large series of school children examined. In 14 per cent of the cases, such bacilli, taken from the throats of well children, produced death in guinea pigs. Convalescents from diphtheria almost always showed virulent bacilli up to 35 days after the infection. He urges prolonged quarantine of diphtheria patients. Hasenknopf and Rothe³⁷ report the result of their studies of cadets of a military school where there were only three cases of diphtheria. All the cadets (185) were carefully examined, but Klebs-Loeffler were found only in the three isolated patients. Other investigators also offer testimony to the effect that the bacillus of diphtheria is *not* ubiquitous.³⁸ Ward and Henderson³⁹ note the value of cultures from both nose and throat in institutional epidemics. Roehr⁴⁰ advises the dilution of antitoxin with normal saline solution in order to get rapid absorption and diffusion. He says that 3000 units given in a quart of saline solution will give as good results in one-half hour as 20,000 units, undiluted, will give in six hours. Brown, Allen and Lupton⁴¹ describe an epidemic of diphtheria in the tuberculosis sanitarium at Saranac. The authors state positively that in the presence of a diphtheria epidemic patients with pulmonary tuberculosis should be treated, as regards the diphtheria, like otherwise healthy persons. Mild diphtheria apparently exercises no harmful effects on the pulmonary lesion; neither does antitoxin in large or small doses. Sadger⁴² reports excellent results of treatment of membranous croup by the use of cold douches, suddenly and forcibly applied. This is a reintroduction of a very old method of treatment.

Meningitis. Jehle⁴³ made a series of examinations with reference to the presence of the meningococcus in the nasopharynx of persons near to, or attendant upon, cases of cerebro-spinal meningitis. He studied 35 actual cases of meningitis and examined 120 persons in their neighborhood. In no case did he find the meningococcus in the nasopharynx of persons in the neighborhood of the meningitis cases. He holds, therefore, that there is *no* contact infection. Bacteriologic studies also showed that pyocyanase is an active bactericide for the meningococcus. On the other hand, Westenhoeffer⁴⁴ thinks that the meningococcus is capable of leading a saprophytic existence in healthy individuals. He reports that healthy meningococcus carriers were recently discovered in a German regiment and barracks where no cases of epidemic cerebro-spinal meningitis had ever been known. Kernig⁴⁵ reports his findings with reference to the sign first described by him. In 208 cases of acute meningitis the sign was unmistakable in 87 per cent, in 148 cases the clinical diagnosis being confirmed by autopsy. The sign was positive in 93.7 per cent of the 82 cases of cerebro-spinal, and in 91.2 per cent of the 80 cases of tubercular meningitis. The severer the case, the earlier the sign appears. The great value of lumbar puncture, as an aid to diagnosis, is of course everywhere recognized.⁴⁶ But various authors^{47, 48, 49, 50} also insist

upon its value as a remedial agent, more especially as a means of relieving pressure symptoms and affording the possibility of injection of fluids of various kinds into the canal. Injurious effects from the puncture, *per se*, are nowhere recorded. Mackenzie⁵¹ reports a case diagnosed by lumbar puncture; treated successfully by puncture and vaccines prepared from cultures of the meningococcus. Seibert⁵² recommends disinfection of the postnasal space with a solution of equal parts of resorcin and alcohol, in all persons coming in contact with patients with meningitis, as a prophylactic measure. Wassermann⁵³ reports good results from the use of an antimeningococcus serum, especially when given early. Balduzzi⁵⁴ had good results from the use of diphtheria antitoxin. It was used especially for its generic action in stimulating the defensive reactions. Vorschultz⁵⁵ reports that the Bier congestion treatment is doubtless of value in relieving the headache of meningitis, though it probably has little or no effect upon the meningitic process itself.

Tubercular meningitis. Koplik⁵⁶ lays stress upon the following points in diagnosis: The slow onset, interrupted by periods of irritability, the irregularity of pulse and respiration, the normal or very low temperature, the absence of hyperesthesia, the anorexia, the discovery of hydrocephalus by skull percussion and lumbar puncture. Don⁵⁷ reports the case of a boy with tubercular meningitis in whom injections of tuberculin brought about great improvement, temporarily, though the child subsequently died.

Acute serous meningitis. Riebold⁵⁸ says that this condition is not rare, that the principal danger is from compression, which is relieved by lumbar puncture. The rapid subsidence of symptoms after such puncture differentiates the affection. The onset may be sudden and very severe, but in primary cases the outlook is good. He urges the more general use of puncture in dubious cases of meningitic aspect.

Measles. Eaton⁵⁹ reports a case of a child of 5, who developed a typical scarlet fever. Three days later the rash was fading, when a typical measles rash supervened. A double desquamation occurred. In the discussion following this report, several other men reported similar cases. The possibility of this double infection is therefore to be borne in mind. Weill and Dauvergne⁶⁰ report a case of measles with two distinct relapses, the case being under their own observation the entire time. They believe that this was probably not an endogenous reinfection, but a true reinoculation.

Pertussis. Bouchy⁶⁰ reviews the statistics of pertussis at Bretonneau hospital. The mortality here ranges from 15—20 per cent, being due to the great number of complications, from which no hospital patient is safe. He urges the abolition of the "whooping cough ward," and isolation of the patients. Concerning the bacteriology, Albrecht⁶¹ finds the bacillus of Eppendorf very constantly in the cases dying of pneumonia consequent upon pertussis. He finds that this bacillus is not to be distinguished from that of influenza, also that this bacillus is to be found

in many cases of measles (80 per cent of his fatal cases). Magid⁶² reports a case of pertussis in an infant of one year, complicated by spasm of the glottis. There were no evidences of rickets or of enlarged thymus. The author found only two similar cases on record. Kilmer⁶³ reports 550 cases of pertussis treated by the elastic abdominal belt (compression). Marked benefit was noted in 87 per cent of the cases. The vomiting, especially, is relieved to a very considerable degree.

Typhoid. Koplik and Heiman⁶⁴ find that relapses are more common in children than in adults (15 per cent of the former). They are usually mild; complications are infrequent. For a prediction of relapse no reliable signs are furnished by the interpyrexial period nor by the course, duration or severity of the original attack. Josias⁶⁵ reports to the Paris Academy that he has used antityphoid serum for the past four years. In the period previous when the cold bath treatment was in vogue, his mortality was 10-12 per cent. With this treatment (200 cases) his mortality is 3.3 per cent. He says that the treatment is safe, and urges that it be tried, if necessary, in conjunction with the baths.

Influenza. Jehle⁶⁶ described an epidemic due to the micrococcus catarrhalis. High fever was the only marked symptom. No complications were observed, not even coryza except in a few instances. Five-drop doses of pyocyanase, dropped into the infant's nostrils acted almost as a specific. Studying the influenza bacillus in respiratory diseases, Wollstein⁶⁷ finds that the bacilli, when they occur in the throat, complicate any disease which may be present. This is especially true of pulmonary tuberculosis, which seems a more severe course when complicated by an influenza bacillus infection.

Tuberculosis. Tuberculin opthalgo-diagnosis in children. Comby⁶⁸ has tested Calmette's eye tuberculin test in children. He finds the test of distinct diagnostic value, though he found the 1 per cent solution too strong, and later used a 0.5 per cent solution. In 132 children examined, the reaction was positive in 62, and post-mortem examination in 4 cases showed a tubercular focus. The negative results in 70 cases were confirmed at autopsy in 6 cases. Comby recommends the ocular reaction as valuable and harmless. V. Pirquet's cutaneous reaction⁶⁹ (local reaction after rubbing tuberculin into scarifications of the skin) is apparently also of value, though its status as a diagnostic aid cannot of course be considered as settled at this early date. In 360 tests on children it was found that a well marked difference was obtained in the reaction hyperemia, between tuberculous and non-tuberculous children under two years of age. Engel and Bauer⁷⁰ applied this test to 48 infants, the findings confirming the value of the test to a certain degree, but not to the extent that a positive response can be accepted as a certain indication of tuberculosis, at least in children. The absolute value of this test, also, cannot be considered settled as yet. Before the 5th International Tuberculosis Conference, Schlossmann⁷¹ delivered a notable address. Study of the literature and a wide personal experience have convinced him that the death rate from tuberculosis in infancy is much

higher than is indicated by the official reports. He believes that primary pulmonary tuberculosis and tuberculosis of the bronchial glands can originate from the intestinal tract. He thinks that the persons who escape tuberculosis in childhood rarely develop it in later life, and therefore he holds that the problem of prevention of tuberculosis is essentially the question of its prevention in early life, which is comparatively easy. D'Espine⁷² again calls attention to the frequency of involvement of the bronchial glands as the primary lesion and to the value of his sign in diagnosis. This is the existence of a bronchophony in the upper interscapular space. In normal children the vocal resonance ends at the 7th cervical vertebra. Where the bronchial glands are tumefied, the voice resonance is carried down to the 5th dorsal. With reference to the question of primary intestinal tuberculosis, it is of interest to note that Jensen⁷³ reports two cases of direct infection in infants who for a long time had been taking raw milk from a cow with tubercular udders. Orth⁷⁴ in 44 cases of tuberculosis in children (autopsies) found ten cases with primary intestinal lesions. Calmette⁷⁵ says that the mesenteric glands in children are actual filters. He holds that the first lesion is always vascular. If inhalation were the most common mode of infection, lesions in the larynx and lungs would be much more frequent. He reiterates his former assertions as regards the intestinal origin of tuberculosis, pointing out that this does not necessarily mean infection by the food. Riviere,⁷⁶ as the result of his own experience, finds tuberculin a most valuable therapeutic agent, particularly in cases of localized tuberculosis. Tubercular peritonitis is usually rapidly benefited. To a child of 1 year he gives 1-12000 mg., to a child of 5, 1-4000, to a child of 10, 1-3000, as average doses.

Syphilis. Marfan⁷⁷ says that a syphilitic origin for rickets is more than probable when this condition develops during the first 3 or 4 months of life, affecting the skull predominantly, with anemia and splenic enlargement. Rickets of alimentary origin comes after the 6th month; legs affected more than skull; anemia is less marked, and big belly and digestive disturbances are more frequent. Thomsen⁷⁸ notes the value of the x ray in diagnosis of osteochondritis in children who show no other syphilitic lesions.

Rheumatism. Conner⁷⁹ reviews the literature on the subject of the bacteriology of rheumatism, and concludes that rheumatism is a specific infectious disease, not merely an attenuated pyemia resulting from the common pyogenic organisms. While there is considerable evidence in favor of the specificity of the diplococcus described by Poynton and Payne, positive proofs of this specificity are still wanting. Poynton himself⁸⁰ calls attention to the fact that his diplococcus has been produced in pure cultures; that it has produced arthritis and cardiac manifestations in rabbits and monkeys. He holds that the fact that it is not to be found in every case cannot be considered as conclusive evidence against its causal relation to rheumatism. Discussing rheumatic carditis in childhood, Coombs⁸¹ concludes, first, that it is a true carditis, involving all cardiac structures. Second, that the rheumatic infection is blood

borne, attacking the heart by way of its own nutritional blood supply. Third, the gravity of rheumatic carditis in childhood lies mainly in the damage done to the muscles. Fourth, that like other rheumatic lesions, it is remarkably apt to recur.

Diseases of the digestive system. Pyloric stenosis. There appears to be a more general acceptance of the value of medical treatment in these cases, as opposed to operative interference. In part, this is due to the more general acceptance of the view that the stenosis is really a spasmodic contraction of the pyloric muscles. Indeed, in Germany, this condition is now most often referred to as pylorospasm. Heubner⁸² has found 49 cases of spasmodic contraction of the pylorus in 10,000 children. All except 3 recovered under medicinal treatment. He uses no lavage; makes the feeding intervals as long as possible; gives opium or atropin (preferably by rectum); applies warm cataplasms to the abdomen, and gives high enemata daily. While the condition may persist for months, conditions are really not as bad as after gastroenterostomy, which has a mortality of 50 per cent, while the expectant dietetic treatment now only has a mortality of 9.5 per cent. In general, Bloch⁸³ is in accord with this view. Sutherland⁸⁴ directs attention to the increasing number of cases treated medically in England with good result.

Recurrent vomiting. Comby⁸⁵ reports 72 cases. A familial history was obtained in 7 cases. 30 per cent had enterocolitis; 80 per cent had constipation. In 25 per cent there were more or less marked symptoms of appendicitis. The attacks of vomiting did not, however, cease with the removal of the appendix in all of the operated cases. Howland and Richards⁸⁶ offer a careful experimental clinical study. They conclude that as a result of a shock to an unstable nervous system, a diminished power of oxidation results, with a resultant loss of power to detoxify certain intestinal poisons, present in excess. These circulate in the blood, not being excreted by the kidneys, to which they are not brought in proper form. They are then excreted by the stomach, so that the vomiting is really eliminative and protective.

Alimentary intoxication. Finkelstein⁸⁷ has contributed a most valuable series of papers, embodying the result of his own careful studies, on this subject. The views do not lend themselves well to condensed abstract. He recognizes 4 stages: (1). Disturbance of normal balance; (2) dyspeptic phase; (3) decomposition phase; (4) intoxication. All stages display the "paradoxical reaction," of injury to the organism (as shown in loss of weight), when the food is increased. The syndrome comprises the following features: Troubles of respiratory system; nervous disturbances; alimentary glycosuria; fever; collapse; diarrhoea; albuminuria with casts, and leucocytosis. The condition is most often found in cases of chronic gastroenteritis, though the intoxication symptoms may supervene without antecedent symptoms. Intoxication is thus not a disease, but a reaction of an organism profoundly affected by toxins.

Peritonitis. Pneumococcus peritonitis. Koos⁸⁸ says that two forms are recognized in childhood, an encapsulated form and a generalized purulent form. The onset is always acute. The presence of fluid in the abdomen can be detected much earlier in this than in tubercular peritonitis. The prognosis of the encapsulated form is not bad if the diagnosis be made and early operation be had. The diffuse form has a much higher mortality. Treatment of both forms is purely surgical. The affection may be primary, infection occurring through the intestinal tract, or in girls through the genitalia. More often it is secondary to a pneumococcus process elsewhere in the body.

Tubercular peritonitis. Schmid⁸⁹ offers a critical review of the literature and a study of cases followed for a long period of time. He finds that the general trend of opinion now is that operation should not be speedily resorted to. Medical treatment of all kinds should be skillfully and persistently tried, though there is always the necessity for individualization of cases. The operation is contraindicated where there is coincident tubercular enteritis or renal tuberculosis.

Alcoholic cirrhosis of the liver in childhood. Jones⁹⁰ reports two cases of alcoholic cirrhosis, one child being 16 months old, and the other 2 years and 11 months. Though there was an alcohol history in both cases, the alcohol had not been given in excessive amounts. The author has collected 74 cases from the literature. He calls attention to the sensitiveness of children to alcoholic poisoning in general and holds that the possibility of production of hepatic cirrhosis should be taken into account when ordering alcohol for children.

Diseases of the respiratory system. Pneumonia. Hayem⁹¹ says, with reference to the diagnosis of lobar pneumonia in childhood, that its difficulty is enhanced by the late appearance of the physical signs and the predominance of the nervous phenomena. Weill and Thevenot⁹² find that the x ray may be of distinct diagnostic value. True pneumonia with fibrous exudate always gives a distinct shadow. The parallelism between the physical signs and the radiologic finding is practically constant. Goodman⁹³ reports the case of a child of 8, with a typical frank pneumonia lasting 12 days. The highest temperature at any time was 99.6°.

Diseases of the blood. Anemia infantum pseudoleukemica. Koplik⁹⁴ presents a detailed report of 9 cases, occurring in children ranging from 11 to 20 months. With this there is given a study of the literature. He holds that there is nothing pathognomonic in the anatomical changes in spleen, liver, bone marrow or other organs. He believes that the affection is probably a severe secondary anæmia with or without marked leucocytosis. The cases reported as terminating in true leukæmia are really cases of leukæmia from the outset. Cases of true V. Jaksch disease, if they terminate fatally, do so through some intercurrent disease—pneumonia or tuberculosis. Simon⁹⁵ offers a classification of the anæmias of infancy: (a) Simple anæmia after hemorrhage, acute infections, digestive disturbances, rickets; (2) chlorotic anæmia, due to digestive disturbances, milk diet kept up too long, use of food poor in iron; (c) pernicious anæmia, with the same etiologic factors as in the

adult; (d) splenic anæmia, with several subdivisions. Special studies of these various varieties are given by various French observers^{96, 97, 98}.

Leukaemia. Benjamin and Sluka⁹⁹ contribute a careful statistical study with appended bibliography. With reference to x ray treatment, they find that the lymphatic form is neither greatly or favorably influenced. The results of x ray treatment are much better in the myelogenous form. Potpeschnigg¹⁰⁰ reports the case of a boy of 2½ years old, taken suddenly ill with edema, without heart or renal lesion, and ecchymoses. The blood picture was that of anæmia infantum pseudoleukæmica-Jaksch; liver and spleen were enlarged. The child improved; three weeks later it was again admitted to hospital, with marked glandular bone pain and the blood picture of lymphatic leukæmia, which condition was found at autopsy.

Diseases of the heart. Endocarditis in infancy. Lemp¹⁰¹ reports 7 cases. The local signs are either wanting or not marked; no bruit; no increase in precordial dullness; there is lividity of the face, often extreme general cyanosis; rapidity and irregularity of the pulse with great dyspnœa. Discussing heredity in relation to heart disease in early life, Galli¹⁰² says that three types may be differentiated: (a) Hereditary aortism with diminished arterial resistance, producing mild lesions in early life and severe ones in the 4th or 5th decade; (b) endocarditic affections. Rheumatic children with rheumatic parents, who get valvular lesions early in life; (c) myocardial affections—occurring in children with inherited tendencies to this form of trouble. Symptoms of myocardial insufficiency ensue on even very slight exertion. The vessels are normal. Neumann¹⁰³ discusses impure heart sounds in children. He has records of 71 cases under 5 years, 89 between 6 and 10 years, and 20 in older children. The impurity of the heart sounds comes on suddenly, usually preceded by catarrhal affections of the upper air passages. Except for slight cyanosis and dyspnœa and slight arrhythmia there are no signs except the impure sounds, yet there is no question as to the impaired condition of the heart muscle.

Diseases of the uropoetic system. Pyelitis. Fisher¹⁰⁴ says that three types of pyelitis are to be seen in infancy: (1) Intermittent fever, progressive emaciation and constipation. (2) Cases with painful and frequent micturition, often without fever. (3) Cases with marked digestive disturbances, usually marked by passage of scybalous masses and feces mixed with shreds of membrane. There is anorexia but no fever. The diagnosis is to be made by microscopic examination of the urine. The general plan of treatment recommended includes rest, warm local demulcent baths, with a diet of milk, alkaline waters, cereals, fruits and gelatin. No meat or eggs in the acute stages. Sodium benzoate and urotropin as medicine. Discussing tuberculosis of the urogenital apparatus in children, Trumpp¹⁰⁵ says that every cystitis, with pus in urine, long continued, with blood at times and marked irritation of the bladder, where the ordinary cystitis treatment is of no avail, should awaken suspicion of tuberculosis.

Diseases of the glands. Enlarged bronchial glands. Boujarel¹⁰⁶ calls attention to expiratory stridor as a frequent sign of enlarged bronchial glands, the stridor being distinguished from congenital stridor by its late appearance, expiratory character and progressive increase in intensity. The author also finds the x ray a valuable diagnostic aid in this condition. D'Espine calls attention to the value of broncophony heard as low as the 5th dorsal as a sign of enlarged bronchial glands. A careful study of 300 cases has convinced Donoghue¹⁰⁷ that enlarged glands of the neck are not, primarily, tuberculous; that they bear the slightest relation, if any, to general or pulmonary tuberculosis. They are due to a mixed infection of pus producing bacilli and will quickly resolve if the source of infection is removed before the glandular tissue becomes disorganized. Hess¹⁰⁸ has examined 300 children with special reference to enlarged epitrochlear glands. In only 15 of these cases were the epitrochlears bilaterally enlarged, and in 9 of these cases there was evidence of syphilis. The author therefore believes that this may be a sign of diagnostic value.

Status lymphaticus. Friedlander¹⁰⁹ reports a case of status lymphaticus in an infant, successfully treated by application of the x ray. Under its use the thymus and the enlarged bronchial glands rapidly diminished in size and the child's general condition improved remarkably. Two years after the treatment the child is in excellent condition, presenting no abnormal signs or symptoms.

Arthritis. Pneumococcus arthritis. Furrer¹¹⁰ reports a case in an infant of 16 months, and tabulates 26 previously reported cases in infants and children. The condition was secondary to pneumonia in half the cases. The larger joints are most often affected; the knee twice as often as the other joints. The complication most to be feared is general extension (sepsis). The mortality in children is about 30 per cent.

General diseases. *Rickets.* Esser¹¹¹ ascribes the origin of rickets to overfeeding of infants by breast or bottle. Experiments on animals have confirmed clinical experience in this regard. Lymphoid cells and young forms of neutrophiles increase rapidly as a result of overfeeding, testifying to leucocytosis resulting from abnormal functioning of the bone marrow, and this in turn entails disturbances in bone formation.

Gout. Fraenkel¹¹² reports a typical case in a 4-year-old child, who had night pains at intervals for one and one-half years until a typical attack cleared the diagnosis.

Diabetes. Lazard¹¹³ discusses the subject of diabetes in childhood very thoroughly. On account of the danger of rapidly ensuing coma in childhood, the antidiabetic diet should not be too strict. An absolute meat diet is by all means to be avoided. In many cases it will be necessary to give children considerable amounts of carbohydrates, oftentimes even sugar itself.

Developmental errors. *Infantilism.* Schuller¹¹⁴ describes three forms. (1) A dystrophic form due to inherited alcoholism, syphilis, tuberculosis or gout. (2) Infantilism from disease of the hemopoetic organs, thyroid, hypophysis, suprarenal, thymus or pancreas. (3) Infantilism

from primary diagenitalism, the purest form, possibly to be explained on the basis of lesion of the testicles (or ovaries) as experimental and clinical study would indicate.

Achondroplasia. Porter¹¹⁵ reports the disease as occurring in six members of a family, constituting three generations. It occurred only in males, no females being born in the three generations.

Miscellaneous. Thiemich and Birk¹¹⁶ have traced the later history of 64 children known to have had convulsions in infancy. In 37 per cent heredity was an unmistakable factor in the convulsions, and in 13 per cent there was neuropathic heredity, a total of 54 per cent of proven heredity. No instance of epilepsy was found in the parents or family of any of the children. Two-thirds of the children were found later to be below the average of intelligence or morals. Some of the others were "only" children, and the writers add that being an only child affords a predisposition for nervous affections. The later development of the children with laryngospasm alone did not differ in any respect from that of the children with pronounced eclampsia. Only a very small percentage of the eclamptic infants developed into normal children.

Attention may be called here to the epidemic of *acute anterior poliomyelitis* in New York City. It is not necessary to go into technical details in this department review, but it may be noted that much research work is being done, particularly with reference to etiology^{117, 118}. A thorough investigation of the epidemic is being conducted by the New York Neurological Society and the Pediatric Section of the New York Academy. With the resources of the Rockefeller Institute and the large hospital laboratories to assist, it is hoped that much valuable information concerning the condition may be obtained.

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ORTHOPEDIC SURGERY.

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The work of Sir Almroth E. Wright on the principles of opsonotherapy has called the attention of many observers to the application of this theory to the treatment of tuberculous disease of the bones and joints. As Wright¹ has stated, it is necessary that those attempting to employ this form of treatment be acquainted with the physiology of the immunizing response, that they realize the conditions under which bacteria cultivate themselves in the organism, that they understand under what circumstances bacterial products, or bacteria as the case may be, are conveyed into the blood stream from local foci of infection. Added to this must be a knowledge of how the organism reacts to such autoinoculations, and there must be an understanding of the conditions necessary to bring the leucocytes and the bacteriotropic substances which are the instruments of immunization into operation on bacteria which are cultivating themselves inside the organism but outside the blood stream. Ridlon² has made a preliminary report on ten cases of chronic joint disease treated by tuberculin injections after the methods laid down by Wright, and concludes that a low tuberculo-opsonic index with local joint symptoms may be accepted as evidence of joint tuberculosis. But a practically normal tuberculo-opsonic index, together with local joint symptoms, neither proves nor disproves joint tuberculosis. When the diagnosis of joint tuberculosis has been made, a high tuberculo-opsonic index should be maintained, if possible. With a high tuberculo-opsonic index an operation for the removal of all or part of the local disease may be undertaken; not so with a low index. If use of the diseased joint lowers the opsonic index, the joint must be protected; if it does not lower the index, it may be permitted; if it raises the index, it should be insisted upon. General elevation of the temperature following a tubercle injection indicates too large a dose. A persistent lowering of the index during treatment by tubercle injections indicates that the injection has been given at the wrong time, during what Wright calls the negative phase, instead of during the positive phase.

R. Tunstall Taylor and E. A. Knorr,³ working on this subject, have drawn the following conclusions: That the question of the size of the dose is important and the opsonic index is the best guide to this, showing at once an overdose and when vaccination is given at too frequent intervals, which no other clinical means will show. They offer, as supplementary means to register the progress of cases subjected to this form of treatment, the use of the x ray to note the changes if any effected by vaccines or tubercle injections upon the disease foci in the bones.

Freiberg,⁴ following the encouraging reports from European observers as to the efficacy of Marmorek's serum in the treatment of joint tuberculosis, has employed this serum in the treatment of ten cases. It may be well to explain that Marmorek's theory and serum are based

on the belief that tuberculin cannot be regarded as the toxin of the bacillus tuberculosis, but must be looked upon as a substance capable of calling forth the increased production of true toxin from the bacilli; normal organisms do not react, because no bacilli are present; hyper-tuberculous animals, on the other hand, do not react because the enormous quantities of bacilli have already called this forth to the degree of saturation. Marmorek's object therefore was to subject the tubercle bacilli to such conditions outside the body as would favor the production of the veritable tuberculo-toxin. Serum drawn from calves which have been given a series of injections of a suspension of guinea-pigs' leucocytes in normal saline solution is used as a culture medium for tubercle bacilli. The filtrate from this culture Marmorek has demonstrated to be a tuberculo-toxin, and by its means has succeeded in immunizing experimental animals against infection with tubercle bacilli. It takes seven to eight months to immunize a horse and serum drawn from this horse may be used therapeutically. The experience of Freiberg with the ten cases above referred to does not coincide with that of Hoffa, who has stated that "Marmorek's serum has a curative action on the course of the tuberculous process which may be termed specific." In two of Freiberg's cases there was no perceptible effect whatsoever. In none was he able to record a cure though he states that this may be due to the short time of observation. In six of the cases improvement of general or local conditions was noted, which would seem to be attributable to the use of the serum. In two of these the improvement of the general condition was considered remarkable. He believes that scientific observers should be very cautious about accepting clinical reports as evidence of cure, and that it is likewise incumbent not to look for the unreasonable in these recoveries; that failures of the past should not be allowed to destroy our scientific optimism nor make us condemn precipitately.

Jeans and Sellards⁵ have studied nine patients treated by means of tuberculin of their own preparation, observing the tuberculo-opsonic indices of each patient, and conclude that the patients are too few for any general conclusion to be drawn. Other dosage and other inter-spacing of dosage might have been more effective and perhaps other forms of tuberculin might have given better results. They are of the opinion that the clinical result and not the opsonic curve is the standard to judge improvement.

Though results have been far from positive and though the technique and laboratory equipment necessary to carry out these various means of treatment are quite elaborate, it seems from what has been attained that we are on the edge of a great scientific advancement. There is perhaps some truth on the other hand in the statement made by Watson Cheyne that "in joint and bone diseases, where no operation would formerly, or now, have been considered necessary, by all means add the use of tuberculin to other methods employed. But blindly to convert the practitioner into an immunizer, as Professor Wright puts it, is, I believe, a totally retrograde step."

Painter and Rogers⁶ point out the fact that the orthopedist, in common with many specialists, is in danger of losing the general surgeon's point of view, and as a means of bringing him back to a broader conception of disease than that which is fostered by the pursuit of a narrow line of practice or research, have contributed a paper entitled "Neoplasms and Their Relation to Orthopedic Surgery." At the present time much attention is being paid to chronic joint disease in the adult, and it is doubtless for this reason that the orthopedic surgeon is seeing more new growths than formerly fell to his lot. Malignant bone tumors are more common than benign ones, and for this reason their early recognition is of great importance. Epithelial growths are more common than those derived from the connective tissue, because epithelial cells are not found in bone, neither are there glandular structures present in such tissue, in which carcinomatous changes may take place. In consequence of this fact primary carcinoma of bone is of extreme rarity. On the other hand metastatic osseous carcinoma and epithelioma are not very uncommon. Sarcomata may be either primary in bone or metastatic. Of the primary tumors central or giant celled sarcomata and periosteal sarcomata are the most common. True myelogenous sarcomata are very densely packed with giant cells, and these are of large size; they do not possess, as is the case with sarcomata in general, only a few giant cells. The author points out the necessity for considering these growths in a differential diagnosis of a lesion located in the skeleton. He shows that the literature is very rich in reports of tumors of the bone, and reports eighteen cases in considerable detail because all of them presented some difficulties in diagnosis, and in many of them diagnosis could not be made, or at least was not correctly made, until operation permitted an histological examination.

Coley,⁷ in an article entitled "Sarcoma of the Long Bone," aside from pointing out the fact that the use of toxins administered to patients affected with sarcoma is no longer in the experimental stage, gives many valuable suggestions as to the diagnosis of these growths and has carefully studied a large group of cases. He lays special emphasis on the differential diagnosis, citing as the conditions specially to be considered bone cysts, tuberculosis, syphilis and osteoarthritis.

Calot,⁸ in an article entitled "Intra-articular Injections at the Hip: Their Technic and Use in the Treatment of Hip Diseases," has given a new method and reported some very favorable results. The inaccessibility of the hip joint for injection and the dangers attendant upon such a procedure are fully discussed. From experiments on the cadaver and considerable practical experience, he concludes that the point of election for such injections lies below the clural arch, outside the femoral vessels; at a point where the femoral head can be palpated. His rule is as follows: The skin is pierced at a point lying 2 to 2.5 cm. in a child (8 to 14 years), or 3 cm. in the adult, below a horizontal line passing between the pubic spines and the same distance outside the femoral arteries; perhaps a better direction, applicable to all cases, is to pierce the skin half way up a vertical line drawn from the anterior superior

spine to the femoral vessels. The needle must not be placed directly in from before backward, but must be inclined upward and inward at an angle of about 15° ; it is carried down to a point where the bone is felt and then the handle is pushed transversely downward, keeping the point in contact with the bone. The injection is made with force so that the liquid may penetrate to the lower depths of the acetabulum. After the withdrawal of the needle, a tampon is held very firmly over the opening for a few minutes to prevent the escape of liquid and favor a transmission to all recesses of the joint cavity. He uses two solutions. In acutely active and in light cases: oil 50 gms., ether 25 gms., creosote $\frac{3}{4}$ gms., iodoform $\frac{7}{8}$ gms., 3 to 10 gms. according to age. In the fungus type the same quantity of the following is used: glycerine 20 gms., naphthol-camphor 3 gms. This treatment he uses every five to six days for two months, then an intermission of six months is allowed, ordinary orthopedic measures meanwhile being continued. The necessity for more definite measures to combat the progress of tuberculous disease is well recognized. Those familiar with hip disease know that the majority of cases have a shortening of three cm., more or less, complicated by vicious position and a more or less solid ankylosis; furthermore, cases with abscess are usually under treatment over two years and have more marked destruction and worse end results. Calot claims remarkable results, both in checking beginning disease and in quieting down old destructive processes by the use of the above method. Though little success has followed intra-articular injections of tuberculous joints in this country, the above paper states so definitely the establishment of early cures and the amelioration of old and well established symptoms that it seems the method recommended by Calot is worthy of serious consideration and trial at our hands.

Steward,⁹ in making some clinical remarks on the treatment of surgical tuberculosis, calls attention to the fact that the general condition of the patient should be improved as much as possible before operation by recumbency in the open air and proper feeding. Incisions should then be made where the structures overlying the abscess are thick, so that their subsequent suture will leave a considerable mass of tissue between the skin and the abscess sac, for if the incision pass through the skin, which is thin and adherent to the sac, the sutures will pass directly through the abscess cavity and thus form lines along which direct infection will be liable to occur, as for example, in the case of psoas abscess, it is preferable to make the incision above Poupart's ligament. It is well to make the opening into the sac to one side of the skin incision, so that, should the abscess refill and the scar in the sac stretch, the parts immediately over it are not so liable to become thin and give way. The use of the finger to explore the cavity should be avoided and curretting should be carried out as gently as is consistent with the complete removal of the lining cavity. The application of strong antiseptics is of doubtful utility. Closure of the wound should be made complete and thorough by the use of several rows of interrupted sutures,

preferably of catgut. A drainage tube should on no account be used, subsequent dressings should be carried out with care to avoid contamination and the parts should be fixed for a prolonged period. He regards aspiration as inefficient and risky in that fluid contents only can be removed and the needle tract is liable to become the seat of tuberculous disease. He believes in the prolongation of conservative methods and in the use of tuberculin as a therapeutic agent.

As a means to hasten the closure of tubercular sinuses, Sever¹⁰ has employed the Bier suction treatment on sixteen cases, and states that though the conditions with which the children were surrounded tended to improve them in every way, it is nevertheless possible to definitely state that these conditions alone would not have been enough to have caused them to do so well in view of our past experience with similar conditions, and without the use of the suction treatment. Eight, or one-half, of the cases reported were either wholly healed or markedly improved, generally and locally. In five the conditions were not apparently improved locally, but there was distinct gain in weight and color-index. Three cases lost ground to such an extent that the treatment was not continued. He believes that this cupping will undoubtedly cause a stimulation of the healing process in the majority of cases. It is simple and easily applied and carried out.

Mechanical supports are discussed by Napier¹¹ in such a way as to define the principles upon which their use depends in the treatment of diseases of the bones or joints, of fractures or dislocations, and in certain injuries, and for the relief of defects or the correction of malpositions. A mechanical support should be regarded only as an aid. The failure to recognize it as such leads to a defeat of its purpose as a therapeutic agent. Constantly one sees the reliance placed by both patient and surgeon on an insole for flat foot, and a brace or plaster corset for lateral curvature. It must never be forgotten that the artificial support replaces the natural support supplied by the muscles, which as a result become weakened. If complete rest and fixation are not essential, the muscles should be exercised, for brace weakness follows brace use. The prevention or correction of deformity should be carefully worked out when using a mechanical appliance, force should be applied only in the right direction, and the influence of growth on deformity must be remembered. The effect of the support on the rest of the body as well as on the particular region which demands its use should be carefully considered. The understanding of these conditions requires careful study and constant observation on the part of the physician undertaking to employ them, and he should never intrust a case needing a brace or mechanical support to the sole care of an instrument maker.

Silver,¹² in commenting on the causes of failure in tendon grafting, states that in recent years much has been done, both clinically and experimentally, to place these operations upon a firmer basis; that a study of the causes of failure in the light of our present knowledge may prove of value, and that these causes fall conveniently into the following

divisions: (1) The selection of unsuitable cases; (2) inaccurate determination of the extent and degree of paralysis; (3) defective plan of operation; (4) imperfect operative technic, and (5) insufficient after-treatment.

It is of the greatest importance that the paralysis be not of a progressive type, that is, that it has reached its final or permanent stage. The muscular power remaining should be sufficient to justify operation. The existence of deformity is a contraindication to immediate operation. When operation is decided upon it is important that it be planned with simplicity and that the relative value of the various muscles involved be thoroughly appreciated. The muscles transplanted should be put under sufficient tension and the sutures employed should be strong enough to insure perfect union. Adhesions are always present to a greater or less degree. Their influence is naturally greater where the incision has been made in firm, unyielding tissue. The effect of sepsis on adhesions need only be mentioned. The period of fixation recommended generally is from six to eight weeks. Earlier attempts at the use of the part are apt to be followed by stretching of the young tissue. The removal of the cast ushers in a period of especial risk. As great care is demanded at this time as at any time during the previous part of the treatment.

Kirmisson,¹² in an article on tendon transplantations in the paralyses, says that today there are recognized two principal methods of tendon transplantation: (1) the transplantation of tendon to tendon after the early method of Nicoladoni; and (2) the periosteal transplantation of Lange of Munich. It is difficult to judge between these two methods and great diversity of opinion exists in this respect between different authors. Vulpius is opposed to periosteal transplantation and to the use of artificial tendons of silk, whereas Lange is opposed to partial transplantation, saying that it is impossible that a single muscle, as for instance the tendo Achillis, when it is divided several times, will accomplish the functions of flexion and extension. In a general way it appears better to employ total transplantation. In this connection one point is important, that the transplanted tendon, or muscle, be made to follow a direct course in exercising its pull. The proceeding recommended by Codivilla, which consists in making the transplanted muscle traverse the interosseous space instead of having it describe a long oblique course about the side of the foot, seems a valuable surgical measure. For the relief of spastic paralysis the author is of the opinion that tendon transplantations have a much more limited scope. He has frequently shown the good results that follow transplantations of muscles at the elbow in infantile hemiplegia. For the relief of Little's disease, on the contrary, tendon transplantation does not seem to be advisable. The results which follow transplantations of the nerves have been too infrequently reported, and then of so recent a date that it is not possible to form a judgment regarding them. It is quite possible, however, that they will some day encroach upon the field now occupied by tendon transplantations as surgical procedures; perhaps they may ultimately supplant them entirely.

Lange¹⁴ has noted that silk used to make artificial ligaments is liable to induce an abscess when sterilized by merely boiling it in water. When boiled in a solution of bichloride of mercury it induced an aseptic secretion. He has obviated this by impregnating the silk with paraffin after boiling it in bichloride solution. He advocates the use of silk ligament for paralyzed flail joints. He would restrict arthrodesis to patients over twenty, who insist upon it. Under other conditions he thinks that we have better means at our command. In using this silk it is important to allow sufficient time after removal of the dressing for the silk to become encased in connective tissue before the limb is used freely. It should be used enough to keep the silk ligaments stretched, but on no account to pull them out or to loosen them before they have their firm connective tissue supports. The connective tissue does not form until its formation is stimulated by gentle functional use of the silk ligaments.

Hoffa,¹⁵ in an article on "Chronic Articular Rheumatism and Arthritis Deformans," divides these diseases of the joints into (a) infectious diseases and (b) non-infectious diseases. Under the heading (a) he includes all chronic infectious joint diseases and gives as types (1) primary infectious chronic joint diseases: polyarthritis, chronica, primitiva or destruens; (2) secondary infectious chronic joint diseases (a) secondary chronic joint rheumatism, a result of acute articular rheumatism; (b) chronic articular rheumatism following acute infectious diseases, e. g., scarlet fever, measles and gonorrhoea, etc.; (c) tuberculosis; (d) syphilis. He divided the non-infectious chronic joint diseases under the following heads: Traumatic chronic arthritis, irritative chronic arthritis, constitutional or dyscrasic chronic arthritis—(a) gout; (b) hemophilia—arthritis deformans—(a) spontaneous; (b) reactive; (c) neuropathic, functional chronic arthritis (joint neuralgias, hydrops intermittens). As a treatment for these various conditions he recommends supporting apparatus, and calls attention to the fact that the resection of the joint has often been performed with good result. The treatment at spas combined with mechanical means has given the best result; massage is also of use where there is atrophy of muscles.

Midelton¹⁶ commends the use of blister counter-irritation applied in the region of the cervical and lumbar enlargements as a treatment for rheumatoid arthritis, and gives notes on five cases in a series of twenty. Several of these cases were extremely feeble and responded favorably to this treatment. The author is not altogether in accord with the view advanced by Latham that this disease is the result of irritative and destructive conditions in the regions of the cord, but believes it to be due to a cerebro-spinal toxemia.

Whitman¹⁷ has contributed a valuable paper on the consideration of the causes and the characteristics of the weak foot. This subject has also been carefully considered by Keppler,¹⁸ both authors agreeing that apparatus should be used as a corrective measure alone, and that these cases depend for their relief and cure entirely upon a regained muscular control and proper attitude in walking and standing.

Bradford and Sever¹⁹ have gone over the result of the treatment of cases of acquired and congenital muscular torticollis at the Boston Children's Hospital since 1879, fifty-three in number, and conclude that it is best to operate on cases between the ages of two and twelve years in order to insure a good result and prevent permanent bony deformities. They recommend open incision with complete division of the two heads of origin of the sternocleidomastoid muscle and the retention of the head in a plaster cuirass for a period of two months.

Allis²⁰ has contributed a comprehensive paper on congenital dislocation of the hip, and concludes that the Lorenz dressing is sound as a mechanical principle and that flexion and abduction are necessary only to the end of the first month; plaster of paris does not permit of the latitude of exercise that should be employed in these cases. He believes that the child can be placed in an apparatus that will allow it freest motion in flexion and extension for six months, keeping it meanwhile in a recumbent position. The advantage of this reclining posture is that when the child is exercising its limbs there is no greater weight upon the newly occupied socket than that of the limb itself. He reports two perfect anatomical recoveries in two children, both under three years of age, who were treated according to this method.

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GENITO-URINARY SURGERY.

By H. McC. JOHNSON, M. D.

A new impetus has been given to the operative technique in cases of tumors of the bladder, by Kolischer and Schmidt (*Jour. Am. Med. Assn.*, July 27, 1907). According to them, operative interference in tumors of the bladder is not, at the present time, conducted according to the generally accepted rules of surgery, each operator following his own notions and fancies. One essential principle, however, is apparent: Benign tumors should be approached from the inside, malignant tumors from the outside of the bladder. The intrinsic qualities of a benign tumor are such that it is manifestly sufficient if its mucosa, submucosa and pedicle alone be removed. In approaching such tumors, there are two methods at hand: One the endovesical, through an operative cystoscope; the other through an incision in the viscus. In the former method, after the tumor is removed with a galvano-caustic snare, if necessary the stump may be again cauterized, the severed tumor being either picked up with forceps introduced through the cystoscope, or pumped out with an evacuator. The other method of removal of a benign tumor involves its complete exsection, after the bladder has been opened by an incision. In order to gain space for a generous incision, the bladder should be freely exposed. The tumor and its face are brought into full view, and made easily accessible, either by catching the base of the bladder with sutures, or by having an assistant make pressure from the rectum or the vagina, as the case may be, and thus force the base and fundus of the bladder upwards. Sutures are now run beneath the insertion of the tumor, and promptly tied one by one in the path of the operator, as he is excising the base of the growth. This detail in technique prevents the hemorrhage, which otherwise would flood the field of operation, and the inconveniences therefrom. If the tumor be located close to the vesical portion of one of the ureters, one end of a ureteral catheter is run a few inches up into the ureter previous to the insertion of the preventive stitches, and the other end is passed out through the internal orifice of the urethra, and thence outside by way of the urethra. Should some of the preventive sutures encircle the vesical end of the ureter, the catheter would be found engaged. In this case, it is simply left in place for a week or so, until the healing process has progressed sufficiently, and then withdrawn. Careful inspection of the bladder should be made, to discover any smaller sized papillomata, particular attention being paid to the parts opposite the main tumor. The bladder is closed by two layers of sutures, and suspended to the abdominal wall to exclude any dead spaces, and the incision closed without drainage.

In cases of malignant tumor, after freely exposing the bladder and opening it as close to the side of the tumor as is compatible with surgical demands, the growth is removed with a section of the entire thickness

of the bladder wall to which it is attached. This resection, in case it does not involve more than one-third of the bladder, should be followed by total suturing of the viscus. After the organ is closed a cigarette drain is run down to the deepest point of the bed of the wound, the bladder suspended to the abdominal wall, and all closed up save for the point of drainage. The permanent catheter should never be employed in cases of partial resection and subsequent complete suture of the bladder. If necessary, the patient is catheterized at appropriate intervals. Should the tumor involve the ureteral opening, the bladder is dissected out to such an extent that not only complete excision of the tumor base becomes possible, but also the vesical end of the ureter is laid bare. The ureter is clipped off at its insertion into the bladder, and the excision of the tumor base, including the ureteral mouth, is accomplished. The stump of the ureter is now reimplanted into the upper end of the excision wound, and the wound closed as completely as is feasible. In those cases in which the radical operation is no longer possible the bladder may be opened from above and the ulcerated surfaces cauterized, or permanent kidney fistulæ may be established.

According to Belfield (*Annals of Surg.*, Jan., 1907), suprapubic cystotomy affords the best access for intravesical operations, and when primary union of the incision is secured, leaves nothing to be desired. Usually, however, primary union is not secured, and leakage into the prevesical space commonly occurs, with all of its sequelæ. To overcome this, the author suggests drainage of the prevesical space into the perineum. When ready to close the suprapubic wound, the membranous urethra is opened with a grooved staff, the gorget introduced and the staff removed. A small trocar and canula is passed from above, along the anterior surface of the bladder and prostate into the groove of the gorget. The trocar being withdrawn, a few silk-worm threads are threaded through the canula and along the gorget, out through the perineal wound. A large soft catheter is introduced into the bladder for perineal drainage. The suprapubic incisions in the bladder and abdominal wall are completely closed, except where the threads protrude, the anterior wall of the bladder being anchored near the recti muscles. Any urine which may leak through the bladder wound and the tissue fluids find ready exit at the bottom of this space.

Swinburne (*Am. Jour. of Urol.*, Feb., 1907) considers the crushing operation in properly selected cases of vesical calculi as the operation of choice, as the patient seldom need be detained longer than two days after it, while the cutting operation, if performed when possible under the ideal condition of completely closing the bladder wound, does not permit the patient to go about under two weeks. Muren has done 15 litholapaxy operations without any anesthetic, the main complaint of the patients being the operation of the evacuating apparatus.

Ware says (*Am. Jour. of Urol.*, May, 1907) that hematuria should be divided into painless and painful varieties. The former, when void of any other symptoms, is peculiar to new growths, while the latter may be significant of any pathological condition of the bladder. It is

therefore desirable to keep in mind the age of the patient. In infants we are most likely to encounter stone; in youth inflammations of the bladder dependent on infections; in middle life new growths added to the aforesaid, and in old age enlarged prostate and stone. As there is nothing pathognomonic in the various hematurias due to pathologic conditions of the bladder which distinguishes them from each other, or differentiates them from renal hematurias, that we can single out by any other mode than the cystoscope, there is therefore all the more justification to adhere to the academic distinction of painful and painless hematuria, and the hematuria in relation to age and its bearing on urinary disturbances.

After having been a warm partisan of the perineal route for performing prostatectomy, Pousson (*Ann. des Mal. des Org. Urin.*, Feb. 15, 1907) has now turned to the suprapubic method with added zeal. This change of opinion has come after a personal experience with fifty cases, twenty-eight of which were done by the perineal and twenty-two by the suprapubic method, the former giving an operative mortality of 10.7 per cent and the latter a mortality of 13.6 per cent. While the death rate by the perineal route is slightly less, yet other reasons cause the author to give preference to the suprapubic method. In the first place, the anatomic simplicity of the region traversed by the high method overbalances the complexity of that by the lower route. By the hypogastric the cul de sac of the peritoneum is the only obstacle to be avoided, which is made much more easy by the Trendelenburg position. In the perineum the bulb of the urethra and the rectum are to be avoided, the author having opened the rectum twice in his twenty-eight cases. Again, the great facility with which the gland may be enucleated suprapubically is the second good reason for preferring it. By the perineal route, this enucleation is slow and laborious. The most frequent obstacle to radical extirpation of the gland through the perineum is the extreme thickening of this region in the obese. True, in these cases the same difficulty is encountered suprapubically, but may be overcome by making a long cuticular and subcuticular incision, when even the whole hand may be put into the bladder. Post-operative hemorrhage is more likely to be encountered upon operating by the suprapubic method than by the perineal, but by making a large opening in the bladder and employing an electric light for illumination, the hemorrhage may be controlled through thermocautery, ligature or tamponade. While the perineal route furnishes the best drainage, yet by the use of a large drainage tube the bladder may be thoroughly drained suprapubically. A suprapubic wound heals quicker and affords better facilities for removing the whole gland.

Two cases of prostatic hypertrophy, in which improvement followed the use of the Roentgen ray, are reported by Tansard and Fleig (*Ann. des Mal. des Org. Urin.*, Dec. 15, 1906). They state that decided amelioration takes place from the radiotherapy, through atrophy of the gland. The treatment by this means is especially indicated in prostatics

that have not reached the period of retention, in young prostatics and in those cases in which operation is not desired or indicated.

Ballinger (*Southern Med. and Surg.*, Dec., 1906) notes that the presence of albumen and albumose in the urine voided after massage of the prostate, when the urine before massage is normal, is as reliable in the diagnosis of prostatitis or an abscess draining into the urethra as renal albumen is in the diagnosis of kidney disease. The recognition of this prostatic and vesicular proteid affords a very simple method of making a positive diagnosis of marked prostatitis and vesiculitis, as well as the mild, obscure cases, whether a microscope be at hand or not. Owing to the alkalinity of the prostatic secretion, and to the fact that deutero-albumose (the proteid constantly found in chronic cases) is not precipitated by boiling, the heat test, as ordinarily applied, will not be satisfactory. Picric acid and citric acid will, however, produce a cloudiness, or precipitate, if added to the boiling urine and allowed to stand until cool. This will disappear again when heated, if due to albumose. Robert's solution, as modified by Boston, containing one part of nitric acid to ten parts of a saturated solution of magnesium sulphate, applied as a layer test, will demonstrate very small quantities of albumen or albumose.

Drainage of prostatic abscesses through the ischiorectal fossa is advised by Lusk (*Ann. of Surg.*, Jan., 1907). This operation is suggested for cases of prostatic abscesses which have not ruptured into the urethra, and present a tense, elastic tumor, bulging towards the rectum. This route is preferable, as it is direct and easily accessible, with no danger of injuring the rectum or urethra, and the scar is small and laterally situated.

In cases of contracture of the neck of the bladder, Martin says (*Therapeutic Gazette*, July, 1907) that excellent results may be obtained by introducing a dilating instrument of sufficient calibre to stretch the neck to 80 or 90 of the French scale. Stretching up to 40 or 50 is practically unavailing, nor is it safe to apply even this degree of distention to the compressor urethral muscle.

From the observation of a large number of prostatectomies, according to Ball (*The Practitioner*, March, 1907), it has been generally accepted that the important muscle to avoid damaging, in doing prostatectomy, is the compressor urethra muscle, and that if incontinence is to be certainly avoided, the membranous urethra should be carefully avoided. Ball says that it seems quite incorrect to argue from operations upon patients with enlarged prostates that the chief sphincter of the bladder normally lies in the membranous urethra, for, in order to ascertain the part played by the internal sphincter of the bladder in controlling urination, he, in experiments upon dogs, has found that if the urethra is cut off in front of the internal sphincter of the bladder, leaving nothing but this sphincter, the dog has control of urination.

In congestion of the enlarged prostate, Bolton (*Lancet*, April 13, 1907) considers that electrical applications meet the indications of relieving local stasis, restoring the circulation and improving the tone of the muscle fibres of the bladder. In electricity we have a certain relief for all cases,

except in those in which a malignant or tubercular process is present, or in cases in which there is fluctuation from the presence of pus. In the early stages of the affection, a complete cure is uniform.

According to Chute (*Amer. Jour. of Urol.*, March, 1907), many of the so-called "essential renal hematurias" are due to chronic nephritis. In some cases the hemorrhage is slight; in others it produces great debility by its long duration, or even threatens life by its profuseness. It is important to recognize the hematuria of chronic nephritis, as the condition may be confused with a most serious renal lesion and a kidney be unnecessarily sacrificed.

Young (*Jour. Am. Med. Assn.*, May, 1907) reports a case of persistent hematuria, of renal origin, which was cured by the injection of adrenalin into the pelvis of the kidney, through a ureter catheter. He says that by the use of adrenalin to stop hemorrhage we have a measure of considerable diagnostic and therapeutic value. If we can in this way cure cases of persistent hematuria without definite renal lesion, much will be gained, and patients saved from the ordeal of cutting operations. If only a temporary cessation of the hematuria can be procured in other cases, a chance will be afforded for more careful study of the urine and a comparison of the function of the kidneys, which may make renal diagnosis much more easy.

In a case of sudden collapse and death, during a severe but supposedly not dangerous enteritis, Munson (*Jour. Am. Med. Assn.*, July 6, 1907) found at the autopsy that both suprarenals were completely hemorrhagic, and the other organs showed marked congestion. From this, he is led to believe that death was due to circulatory failure, caused by the sudden removal of the tonus producing secretion of the suprarenal glands.

Watson (*Ann. of Surg.*, Sept., 1907) proposes the performance of bilateral nephrostomy, tying off both ureters at the same time, and establishing permanent renal fistulæ, thus diverting the entrance of all urine into the bladder, as a palliative measure in cases of vesical tuberculosis originating in descending infection in which both kidneys are involved, and when the tuberculous lesions of the bladder are causing suffering, and as a preliminary step to the total extirpation of the bladder in cases of vesical tumor. He has devised a suitable apparatus to be used for collecting the urine in these cases.

Griffon suggests (*Ann. des Mal. des Org. Urin.*, Feb. 15, 1907) that as the need of a very early diagnosis of urethral gonorrhea is self-evident, culture methods should be employed. This gives the diagnosis before the purulent stage of the discharge.

It is observed by Osler (*Lancet*, May 25, 1907) that not infrequently the diagnosis of an obscure affection of the abdomen is determined by an examination of the testicles. The nature of a peritonitis or of an abdominal tumor has been cleared up by finding a tuberculous orchitis, or in syphilis gummata may occur at the same time in the liver and in the testicles. But it is more particularly in malignant disease of these organs that abdominal features are met with. In the abdominal tumor there are two groups of cases: First the tumor is a secondary involvement of the lymph glands, and in the other the tumor is the primary involvement

of the retained testis in a monorchid or a cryptorchid. The lymphatics of the testicles discharge very high up into the aortic lumbar glands. The secondary tumor is, therefore, above the level of the navel, and usually begins in the upper quadrant of the abdomen, on the side of the affected organ. It has all the characteristics of a deep-seated mass, which has sprung from the retro-peritoneal glands. The solidity of its growth, its depth, the immobility, the absence of an outline, conforming to the well-known shape of a renal or splenic tumor, and the impossibility of grasping it bimanually, which can be done in the majority of all new growths of the kidney, and the character of the throbbing impulse, which is so marked in these deep-seated lymphatic tumors in the neighborhood of the aorta—all these points favor the view of a large secondary mass involving the lymph glands, connected with the left testicle.

Bucknall (*Lancet*, Sept. 28, 1907) proposes the following operation for penile hypospadias: The penis is drawn well up over the pubis and an incision is made on each side of the median line, one-eighth of an inch from and parallel to it, beginning on the glans and extending down on the under surface of the penis and on to the scrotum until the incisions on the scrotum, measured from the misplaced meatus, are equal in length to those on the penis, measured from the same point to their commencement on the glans. From the extremities of the two incisions, others are made outward at right angles, each a quarter of an inch in length. These flaps are dissected up off the side of the penis and scrotum, respectively, and rolled outwards from the median line throughout their whole length. The flaps are held in the everted position and the penis flexed down on to the scrotum in the middle line about a transverse axis, passing through the misplaced meatus. The median strip of skin on the ventral aspect of the penis, and the raw areas flanking it, thus come to lie on the corresponding median strip and raw surfaces on the front of the scrotum. The penile strip of skin will form a roof for the new urethra, and the scrotal strip will form its floor. The raw surfaces on each side, when properly sutured, will grow together, fixing the penis to the scrotum, and closing in the lateral walls of the new urethral tube, so as to render it water tight. In suturing the flaps, the sutures are placed transversely and drawn taut over a small piece of rubber tubing, placed on either side to prevent puckering. In passing the needle on the inner side of the flaps, care must be taken not to enter the new urethra, but still be close enough to exactly approximate its edges so as to prevent leakage. A small rubber catheter, with the eye cut off, is passed along the new urethra and pushed a short way down through the old meatus, so as to drain off the urine without soiling the new portion. The piece of catheter is removed on the fourth day, and the sutures on the fourteenth day, when the second operation may be performed, or postponed indefinitely, as desired. The second operation consists in dissecting up the penis and new urethra from the scrotum, lateral flaps derived from the scrotum being left on either side of the penis to close in the surface beneath it. Other flaps are formed on the scrotum, by means of which the raw surface there is closed. If the lateral flanges used to unite the penis and scrotum project too freely, they can be trimmed off to improve the cosmetic result.

OTOLOGY AND LARYNGOLOGY.

By W. E. SAUER, M. D.

The literature of the past year gives ample evidence of the enormous amount of work done in these specialties. The contributions to the laryngological and otological literature are so numerous, that in the few pages allotted to these subjects the reviewer will be able to mention only the most important points that have come to his notice, especially those relating to diagnosis and treatment.

Considerable interest has manifested itself on the value of the x ray in the diagnosis of sinus diseases. Goldman and Killian¹ have reported the results of their work. They have found that the Roentgen pictures are of especial value when taken in the saggital diameter of the skull, giving information of the topographic anatomic relations of the accessory cavities and their diseases. According to their views, it should be classed with the other methods of examination. A résumé of their observations furnishes evidence of the diagnostic value. These plates show cases of frontal sinus, ethmoid and antrum suppuration, diseases of all the sinuses combined, and cases of absence of the frontal sinus. In the reproductions of the exposures one mainly recognizes in an instructive manner the different relations of the frontal sinus with its orbital, temporal and frontal prolongations, which are at times separated from the main cavity by partitions. Wassermann² is also a very enthusiastic advocate of the x ray. He has never been led astray in the interpretation of a Roentgen plate, and he has frequently corroborated the findings of the x ray by operative opening of the sinuses. He lays special stress on the value of the x-ray plate in the diagnosis of diseased ethmoid cells. Langworthy³ believes that the x ray has done as much for the advancement of surgical rhinology as almost any hitherto single discovery in the domain of medicine and surgery. Beck⁴ also expresses himself as favoring the x ray as a diagnostic agent, and concludes as follows: 1. That the real value of a skiagraph for diagnosis of sinus disease is in taking an antero-posterior exposure. 2. That the skiagraphs taken in the transverse view are of but very little value for diagnostic purposes, owing to the fact that one side is superimposed upon the other, but it will give an outline of the sphenoidal as well as the anterior group of cells as to their shape and size. 3. That the angle at which the tube is placed is of the greatest value, taking particular care that the rays do not have to penetrate through the massive part of the base of the skull. A transverse line seen across the orbit is found if the angle at which the plate was taken is correct, and this line is found about a half an inch below the supraorbital margin. 4. Dangerous conditions, as burns, alopecia, are possible only if one has no knowledge of the technic, or from carelessness. However, do not expose your patient to repeated long exposures within a brief period of time.

There is still considerable discussion as to the best method of treatment in the chronic affections of the maxillary sinus. The majority of operators prefer the intranasal methods of opening the sinus, though there are some who still believe there are a number of cases than can be cured by irrigations through an opening made in the alveolar process. The indications for and the advantages of the intranasal route are given by Myles⁵ and Abraham.⁶ Black⁷ and Moore⁸ make a plea for conservatism in the treatment of these cases. Vail⁹ has described a curved saw with which an opening is easily made into the antrum through the nose. Curtis¹⁰ has devised a special chisel for opening the antrum through the nasal-antral wall. Denker¹¹ reports the results of his radical operations on the antrum in 18 cases (the technic was described in the review of 1906). The cases were all chronic cases in which the usual methods had failed. The cases all recovered in less than 30 days; in one case a cure was obtained in 6 days. There were no ill effects following the removal of the antral nasal wall in any of the cases. Good¹² describes a new method of opening the frontal sinus intranasally; after cocainizing, a protector is inserted into the sinus and a part of the processus frontalis of the superior maxillary bone, as well as a part of the spina frontalis of the frontal bone, and the anterior wall of the ethmoidal labyrinth are chiseled through and removed with forceps or a curette. The anterior ethmoid cells are removed with a curette, a frontal sinus rasp is introduced and the spina frontalis is rasped out, as well as the frontal accessory ethmoid cells, if present. The sinus is then curetted with flexible curettes and diseased membrane removed. Good believes there is absolutely no danger to the intracranial structures. The most that could happen would be to rasp through the orbital wall, but this is avoided by an assistant putting his finger into the orbit. Halle¹³ has also described a new method for opening the frontal sinus intranasally. He introduces a protector into the sinus and then enlarges the opening with a special drill, which he has devised. He has demonstrated this operation on numerous specimens, and clinically in ten cases, twice in one of the cases; making 12 in all.

The relation of the diseases of the nasal accessory sinuses to diseases of the eye have been discussed by Brawley¹⁴ and Griffin.¹⁵ The latter states that it is only in recent years that the ophthalmologist and the rhinologist recognize the fact that many ocular symptoms are frequently produced by inflammatory conditions in the sinuses. Not only may the symptoms of refractive defects, muscular imbalances, conjunctivitis, glaucoma, etc., be simulated, but active destructive lesions such as neuritis, choroiditis, iritis and keratitis may result from an infective process in adjacent ethmoiditis or sinusitis. He does not regard an ocular examination complete which does not include an inspection of the nose and its accessory sinuses. Brawley states that, as a rule, no history of nasal disease is obtainable, and the patient will frequently object to a nasal examination. Mayer¹⁶ reports a case of blindness of nasal origin. The case was that of a woman who had suffered for years from empyema of the accessory sinuses, and who, after an attack of acute

coryza, suddenly became blind in one eye, with a considerable reduction of vision in the other eye. The sinuses were freely opened and irrigated, and the vision in the partially affected eye was restored to almost normal, but no change in the blind eye. Mayer urges that the accessory sinuses should be carefully examined in all cases of retrobulbar neuritis.

In the treatment of intumescent and hypertrophic rhinitis, Ingals¹⁷ still maintains that the galvano-cautery, properly applied, is the treatment par excellence, and that cures can be effected in more than 95 per cent of the cases. Neres¹⁸ claims the following advantages for voltaic turbinal punctures, by means of the negative pole, in the reduction of turbinal hypertrophies: 1. Pain is practically nil. 2. Bloodless operation. 3. No scar tissue remains on the surface. 4. The mucous membrane after treatment performs its natural function. 5. No post-operative complications follow. Kuyk¹⁹ reduces turbinal hypertrophies by making one or more incisions through the mucous membrane well down to the bone, when with a broad nasal saw the bone is cut into, to a depth depending on the consistency and hypertrophy. After an experience extending through a period of six years, he has found this method very satisfactory. Yankauer²⁰ has devised a new method of operating on the turbinate. His procedure consists of making two parallel incisions above and below the hypertrophied portion of the turbinate. The hypertrophied portion of the mucous membrane is then dissected from the bone, and a portion of the bone is removed with suitable forceps. The edges of the mucous membrane are then brought together and stitched over the wound. Union by first intention takes place, leaving a minimum amount of scar tissue. Yankauer has devised a number of ingenious instruments, but it is doubtful whether the method will ever become popular, owing to the time required to complete the operation. Moraweck and Hall²¹ advocate the complete removal of the inferior turbinate. They claim that dryness of the throat and increased tendency to infection of the lower respiratory tract, as claimed by some, does not follow, and that these claims are not founded on facts. They have never seen any ill effects in any of their cases, and claim to have operated on more than 100. Cortez²² reports a typical columnar celled epithelioma of the inferior turbinate in a woman aged 38. The special points of interest are, first, the age of the patient; second, the rarity of primary cancer of the nose, especially the inferior turbinate.

Caslebery²³ gives the following indication for the removal of the middle turbinate: 1. To promote drainage and counterdrainage in nasal accessory sinus suppuration and access in diagnosis and treatment. 2. To promote drainage and cleansing in certain types of atrophic rhinitis. 3. To relieve edematous turgescence and to provide for the radical treatment of non-suppurative ethmoiditis and nasal polypus. 4. To suspend pressure leading to headache, neuralgia, eye symptoms and broadening of the nasal bridge. 5. To improve nasal respiration and ventilation. 6. To relieve hyperesthesia and to diminish certain re-

flexes, sneezing, asthma, etc. The technic of removal has been discussed by Richards,²⁴ which is the more commonly employed method of "punch forceps and snare." Sluder²⁵ employs a modification of Hajeck's hook for making the initial cut. The hook is especially indicated when the nasal passages are very narrow. Stucky²⁶ lays special stress on the non-operative treatment of the middle turbinate. He is of the opinion that the average case of disease or irritation of the middle turbinate does not require surgical treatment, the cases being mostly systemic. The exciting factor in precipitating an acute attack is not so frequently due to exposure to cold as to overindulgence or injudicious eating and drinking, and urinalysis will show an excess of indican and uric acid. The treatment consists of elimination and correcting the faulty intestinal metabolism, restoring bodily resistance, and in cleansing, soothing and protecting the irritated area.

Though there has been much work done on atrophic rhinitis, we must agree with Fraenkel²⁷ that much more will have to be done before our knowledge is mature and certain. Beck²⁸ brings out the value of radiograms in estimating the involvement of the sinuses in this disease, as well as the consistency of the bony structures of the turbinates and other bones of the face. He is not absolutely certain, however, that the skiagraph is true in every instance, but he believes it to be in the majority of the cases. Of the 24 cases of atrophic rhinitis that he radiographed, the sinuses were found to be involved in all but three cases, but they were of a light type of atrophy. He employed the various methods of treatment, and sums up his findings in the following conclusions: 1. The sinuses are very frequently involved in atrophic rhinitis, whether primarily or secondarily it is not always possible to determine. 2. That when the sinuses are involved the atrophy must have some other cause, as for instance bacteria, heredity, etc., for we find many sinus troubles with hypertrophy. 3. That radiographs are an aid in diagnosis, and should be practiced by every rhinologist. 4. That treatment direct to the sinuses is followed by improvement much more readily than when they are not treated. 5. That surgical intervention, preferably intranasal, give the best results. 6. That the results of local treatment, as tamponing, massage and electricity, vapor, therapy, paraffin injections, Bier's treatment, etc., are brought about by the production of hyperemia and leucocytosis, bringing about an alternating condition and possibly a resolution or restitution of glandular structures, normal mucous membrane, and even some of the erectile tissue. Sondermann²⁹ recommends the use of a rubber condom for the tampon treatment of atrophic rhinitis. The condom is introduced collapsed, then it is inflated until it fits close against the wall of the nose, filling all the crevices, and after five or ten minutes the air is allowed to escape and the condom is removed, many of the crusts adhering to it, while those remaining in the nose can be expelled spontaneously.

The literature on the septum has not been nearly so extensive as in the past. Moscher³⁰ offers a new theory as an etiologic factor in the deformities of the septum. He believes that the delayed eruption of the

lateral incisors causes a misplacement of the premaxillary wings, and hence a deflection of the septum. Regarding the treatment of septal deformities, it must be admitted by its opponents that the submucous resection operation has received general favor, and has been accepted by the majority, as the operation of choice. The technic of this operation was considerably improved upon during 1906, but nothing of special advantage has been added during the past year. Coffin³¹ considers the most objectionable feature of the resection method to be the length of time required to perform it, and the strain on the patient and the operator. He claims to have overcome both objections in a new operation which he performs in two sittings. At the first sitting a more or less perpendicular incision is made anterior to the deviation, and the mucoperiosteum is raised as far as the edges of the deviation. The space then made is injected with sterilized vaseline and allowed to heal one week; at the end of that time a similar incision is made on the other side, a little anterior to the first incision. The perichondrium is elevated and the deviations removed with a blunt knife. A pledget of antiseptic cotton is introduced into the nostril, and is then pulled forward to hold the septum in the median line, and the wound is allowed to heal. Jackson³² describes an operation for closing small perforations of the septum, by means of a large, round flap taken from the mucosa and submucosa of the inferior turbinate. The flap is raised and after freshening the edges of the perforation, it is stitched in place. If the perforation is large, it may be necessary to take a flap from the opposite turbinate. Haseltine³³ has also described a method of closing septal perforations. The edges are carefully pared, and a V-shaped section is removed above and below. A vertical incision is then made on the septal mobile, and a flap is lifted backward to and entirely around the perforation. The muco-perichondrium of the opposite side is elevated entirely around the perforation, and the bone or cartilage of its immediate border is removed; a vertical incision is made far enough behind the aperture to produce a flap wider than the anterior posterior diameter of the perforation. This flap is brought forward and sutured to the anterior margin on the same side; the proximal flap is slid backward to meet the posterior margin, if possible, but not far enough to uncover the juncture of opposite membrane. The flaps are held in position by the Bernays-Simpson tampon.

The question as to the etiology of nasal polypus is still somewhat clouded. Yonge³⁴ thinks that the formation of polypi is the result of a chronic inflammation which is followed by dilatation of the glands and gland ducts; then edematous infiltration of the surrounding tissue, due to an increased permeability of the capillary walls; then by the formation of folds or projections in the infiltrated mucous membrane; then an increased edema in certain of these folds. The result is the formation of a flat edematous projection, known as the nasal polypus. Williams³⁵ is of the opinion that nasal polypus is produced by the obstruction of the lymphatics; that the occurrence of localized edema was due to an infective lymphangitis, the lymphatics becoming obstructed, and not the arteries or veins directly. Abrahams³⁶ reports a case of cystic degeneration

of a nasal polypus. The polyp removed was found to contain a cyst lined with ciliated columnar epithelium. Harmer³⁷ regards the question of the transformation of the polyp into cancer as possible, but not probable.

The subject of hay fever has not received as much attention as during the past two years, when the Dunbar serum treatment was claiming the attention of medical men generally. During the past year very little was heard of the Dunbar treatment. Curtis³⁸ reviews the recent theories on etiology and treatment of hay fever, and arrives at the following conclusions: 1. Hay fever is a disorder amenable to no specific treatment. 2. The number of cases of hyperesthetic rhinitis from other causes than rag weed and other pollens, is about one-third of the total number. 3. About one-third of the cases supposed to be due to pollen reaction may be relieved by constitutional and surgical methods of treatment. Predisposition to attack in these cases being due to definite causes, would suggest the theory that induced enervation of the sympathetic was an important etiologic factor. 4. Primary intoxications may take place from pollen toxins in cases where the sympathetic systemic apparently is not previously enervated; these cases theoretically should react to antitoxin treatment. 5. The consensus of opinion today is against the claims made for pollantin, though observers who have been instructed personally by Prof. Dunbar indorse unqualifiedly the great benefit to be derived from the treatment. 6. Medically, the suprarenalin capsule products hold the first place today in the treatment of hyperesthetic rhinitis. 7. The importance of constitutional treatment as an adjunct to any local application is of supreme importance. 8. The best of all treatments yet found is the climatic, with previous attention to nasal conditions. Braden Kyle³⁹ reports his recent experience in the study of the chemistry of the saliva in relation to hay fever. He states positively that in at least 60 per cent of the cases he has been able to demonstrate that the local irritation is primarily due to an altered chemistry and to altered resistance. He has succeeded in relieving these cases by changing the reaction of the saliva from acid to alkaline and from alkaline to acid; by such drugs as citrate of soda, benzoate of soda, hydrochloric acid and dilute nitric acid; in that way nearly 60 per cent of his cases were relieved without any local treatment whatever, either by local or systemic remedies. Schadle⁴⁰ still holds to the theory of Fink, of Hamburg, that catarrhal sinusitis of the antrum of Highmore is an important etiologic factor in the causation of hay fever. He has treated 91 cases by washing out and medicating the antrum, and has obtained a cure in nearly every one of them. Killian⁴¹ believes that the hypersensitiveness of the nasal mucosa in hay fever and vasomotor remedies is confined to four principal points; these spots are found on the septum in the region of the tubercle, and on the lateral wall just in front and above the anterior end of the middle turbinate, that is, in the region of the ethmoidal nerves. The treatment is two-fold: 1. Local treatment, which consists in the removal of causes which excite hyperesthesia of the mucosa and elimination of reflexes. 2. General treatment when the nervous system is to be considered. The

elimination of the reflex is best accomplished by cauterizing the four sensitive areas with trichloroacetic acid, after cocaineization. On each of these four areas, a cauterized surface of less than one-half inch in diameter suffices. The result is sometimes permanent, but even when only temporary, it may extend over an entire hay-fever season. Mechanical obstruction of the nose must be relieved. Pereira⁴² maintains that hay fever is a hyperemia of the conjunctiva, and that the other symptoms are mostly secondary. He associated hay fever with pterygium, and claims that sufferers from hay fever are invariably great sufferers from pterygium.

Smith,⁴³ in observing 300 cases of asthma, has found that the origin lies in the nasal fossæ; the asthma being due to pressure on the asthmato-genous points in these cavities, this acting on the pneumogastric nerve, and explains the various phenomena of true asthma. This pressure irritation may be on the septum, and there may be no occlusion of the nares; it may be due to a closed empyema of the ethmoid cells, or sinusitis. In every case of true asthma, the relief of pressure in these areas will give almost instant relief to the spasm, and the relief may be made permanent by such treatment as will prevent pressure. Sullzer⁴⁴ advises the administration of atropine hypodermatically, for the relief of asthmatic attacks; a dose of one mg. causes a marked improvement in the subjective conditions.

Developmental defects, such as hair lip and cleft palate, had formerly been left to the care of the general surgeon, but during the last few years rhinologists have taken them up with considerable interest, as shown by the case reports. Brophy⁴⁵ describes the anatomy of the palate, both normal and cleft, and gives the following as causes of cleft palate: 1. Hereditary. 2. Mechanical force exerted by the lower jaw against the upper jaw in embryo. The defect is due to failure of union. He states that the bony cleft should be closed within three months after birth, when the bones are soft and easily moved in the correct position. The hard palate should be closed before the lip operation, which should follow in three months, and the soft palate should be operated on last, preferably when the patient is from 14 to 16 months old. Starr⁴⁶ reports that many operations for cleft palate are failures from breaking down of the line of closure, which is due to the sucking of the stitches by the patient, or infection from the mouth. In order to avoid this, the author employs a thin plate of aluminum to protect the line of closure; and to prevent infection, the mouth is sprayed with a solution of boric acid and 10 per cent rectified spirits. According to Makuen⁴⁷ an operation for the closure of a cleft palate should be done only when there is a chance of success. It should be done only by those possessing special skill in nasal, pharyngeal and aural surgery. When it is probable that several operations are necessary, the parents of patients should be so informed. In the difficult adolescent cases, a preliminary tracheotomy may be necessary. The palate should be closed to improve the health and improve the faulty speech. The general health of the patient is benefited by improving the hygiene of the naso-pharynx and aural cavity. The

speech is improved by a course of psycho-physical training, in which the patient is taught first to recognize normal speech and then to make the best use of his still imperfect organ and its production.

The literature on adenoids has been very abundant, but very little of importance has been brought out. Morse⁴⁸ points out their frequency and importance in infancy. He claims that often a small amount of adenoid tissue may cause a marked amount of obstruction, with the resulting phenomena of nasal obstruction in an infant. The removal of these adenoids he considers a simple matter. White⁴⁹ examined 75 adenoids histologically, and found that primary tuberculosis was present in 5 per cent of all the cases. He claims that tuberculosis is not an important factor in the etiology of adenoid hypertrophy, but adenoids and tonsils are considered important channels of infection in tuberculosis of the cervical glands. The question of anesthesia in the removal of adenoids seems to be a fairly settled one. When an anesthetic becomes necessary, ether is the anesthetic. Chloroform has proven to be a very dangerous anesthetic in these cases. Yearsly⁵⁰ greatly deprecates unskilled operations, and strikes the key note when he states that recurrence of the growth is but too often another term for improper removal. Wochenheim⁵¹ reports two cases of secondary hemorrhage following the removal of adenoids. The hemorrhage occurred five days after the operation. Both operations were performed upon children 9 years of age. The curette was used in the one case, and the forceps in the other. He found adrenalin of no value in controlling the hemorrhage, but found vinegar applied through the nose to be very effective. Iglaur⁵² has hit upon a plan by which most of the bleeding can be avoided during adenoid operations. He ties a piece of rubber sponge to the end of a string which has been passed through the nose, just as in applying the post-nasal tampon, and immediately after the adenoids are removed this tampon is placed in the naso-pharynx and allowed to remain 5 to 10 minutes, when it is removed. In this way the author has succeeded in performing the operation with a minimum loss of blood.

Considerable work has been done with reference to the relation of the tonsils and lymphoid structures in the pharynx to systemic infections. Goodale⁵³ is of the opinion that the tonsils alone are not the only points of entrance, but that the lymphoid follicles of the posterior pharyngeal wall and of the pillars are responsible in many cases. He reports in detail a case of rheumatism in which the tonsils had been removed, but there was recurrence of the rheumatism with acute sore throat. Treatment directed to the throat was followed by rapid improvement of the joint symptoms. There is a marked tendency to the more radical removal of the diseased tonsillar tissue. From the discussion of this subject by the members of the American Laryngo-Rhinological Society at its annual meeting, it would seem that the tonsillitome will soon be relegated to the scrap pile. Among the authors making strong pleas for the radical removal of the tonsils we find Morowec and Hall,⁵⁴ Gallagher,⁵⁵ Griffin⁵⁶ and MacLaren.⁵⁷ Wright⁵⁸ has noticed for many

years in the macroscopic sections of lymphoid tissue removed from the naso- and oro-pharynx which he formerly regarded as ectesia of the lymph channels, and reported them as cysts of the lymphoid tissue. A recent observation has led him to believe that some, at least, of these spaces in the lymphoid tissue are due to a fatty degeneration, and that this is one of the processes of tonsillar regression. Lind⁵⁹ has found latent tuberculosis in 5 out of 50 cases of enlarged tonsils. In only one case could a tubercular lesion be demonstrated elsewhere. Robertson found that 8 per cent of patients presenting themselves for nose and throat treatment had primary tuberculosis of the faucial tonsils; also that a large number exhibited lung tuberculosis as a direct infection from the glands of the lymphatic chains.

The fossa of Rosenmueller as an etiologic factor in middle-ear diseases is pointed out by Bryant.⁶⁰ He has made a number of investigations and concludes as follows: Rosenmueller's fossa is frequently the seat of masses of lymphoid tissue, as well as bands of adhesions, which greatly interfere with the movement of the cartilage of the tube. These pathological structures can be seen best with the salpingoscope. The removal of these abnormalities is frequently a very effective treatment in middle-ear conditions. Emerson⁶¹ also lays great stress on the value of the removal of bands of lymphoid tissue in Rosenmueller's fossa, and reports a number of cases in which marked benefit followed this procedure.

Another case of primary laryngeal tuberculosis is added to the literature by Manassa.⁶² Chiari and Schech have been able to find only 4 cases of primary tuberculosis of the larynx based on autopsy. In the case reported by Manassa, a subglottic swelling could be seen which occluded the lumen of the trachea. Marked dyspnoea occurred, and a tracheotomy was performed; the patient died suddenly one week later. There was a circumscribed tubercular process of the right vocal cord, with perichondritis of the cricoarytenoid articulation. No tubercular lesions were found in any other part of the body. Bardwell and Adams⁶³ report six cases of well marked tuberculosis of the larynx, having ulceration in addition to the congestion, in which complete vocal rest was followed by great benefit. In the four ulcerative cases the ulcers were cicatrized; in five cases the normal voice was restored, and the general health was improved. Jurasz⁶⁴ states that prophylaxis is of great importance, and that it is essential to place the larynx at rest. The diet should be regulated with reference to its consistency. The use of astringents and the curette should be avoided if the disease is widespread. Semon states that the rest cure, in order to be of any value, must be faithfully carried out, and this, he states, is oftentimes extremely difficult. Importance of the early attacks of malignancy of the larynx is emphasized by Stein.⁶⁵ He states that every case of chronic hoarseness, especially if unaccompanied by a cough, should be regarded as suspicious, and carefully watched, on account of the frequency of hoarseness as a symptom of many laryngeal diseases; its significance is liable to be disregarded until too late to save the patient's life. In any case in which

a chronic hoarseness, for which no definite cause can be determined, should be repeatedly examined. Stein considers the external method of operation as being the preferable one, stating that it is impossible to remove all the diseased tissue by the internal method. Semon⁶⁶ also advises early diagnosis when thyrotomy will suffice to save the patient, in cases of intrinsic cancer. Total laryngectomy will remain the operation of choice in cases of intrinsic cancer of the larynx. According to Sendziak⁶⁷ the proportion of cases is found to be constantly increasing, while the mortality is constantly decreasing. The mortality with thyrotomy was far the lowest, only 3.5 per cent. Cohen⁶⁸ states that the modern procedures in excision of intrinsic malignant growths of the larynx virtually exclude all endolaryngeal methods. The author prefers his own method in doing a thyrotomy. He begins by doing an ordinary tracheotomy, excising the skin only so far as to uncover the larynx, leaving intact a broad bridge of skin above the cannula. This considerably lessens the dimension of the external wound, and favors the reunion in the sequence. Baumgarten⁶⁹ states that in his experience with multiple papillomas in adults, the larynx was always as soft and transparent as a child's larynx, and the patients were all blondes. He states that in time the tendency to papilloma formation ceases, generally with puberty, but also after a time in adults. He never applies local caustics and has never noticed any benefit from iodine or arsenic internally, but extols the lori operation as easy, simple and humane.

The employment of the tracheoscope, bronchoscope and esophagoscope as a means of diagnosis and treatment has rapidly gained favor with the majority of laryngologists. Prof. Killian's visit to this country last June, when he demonstrated his methods in numerous clinics in the United States, has done much towards the general employment of these instruments. In a paper read before the American Rhino-Laryngo-Otological Society, in which Killian takes up the treatment of foreign bodies in the respiratory tract and the esophagus, he classifies the various bodies into two great classes, the hard and the soft. These are again divided according to their shape. He lays down special rules in each instance; he also reviews the results of tracheo-bronchoscopy. So far 164 cases have been reported, with 117 successful removals of foreign bodies from the trachea and bronchi. Killian had only one death in 20 cases, and this occurred six months later from a severe lung complication. In only two cases was he unable to find the foreign body. Esophagoscopy was performed in all cases where the patients were thought to have swallowed a foreign body. He considers this method most satisfactory from a diagnostic and therapeutic standpoint. The literature is rich in case reports, as well as improvements in the instrumentarium. Among the latter we find marked improvement made by Bruennings⁷⁰ in his modification of the Killian instruments. Jackson, of Pittsburg, has written a book on tracheo-bronchoscopy, esophagoscopy and gastroscopy. He has succeeded in removing a foreign body from the stomach, by means of his gastroscope. He also reports a case in which he made direct applications to a gastric ulcer. Stark⁷¹ discusses the esophagoscopic

diagnosis of the diseases of the upper part of the esophagus. He quotes Mickulicz as stating that esophagoscopy is possible in only three-fourths of all adults. Stark is convinced that it is possible to safely employ the esophagoscope in every normal child, as well as in every normal adult. He reviews the various diseases of the esophagus, and states that the more closely the esophagus is examined, the less often will the diagnosis of esophageal neurosis be made. He claims never to have failed in removing a foreign body by means of the esophagoscope. He considers the esophagoscope a dangerous instrument only in the hands of the inexperienced.

The clinical value of the differential blood count in operative otology is discussed by McKernon.⁷² He bases his observations on a study of 166 cases, of whom 108 were adults. He concludes that in septic cases, and particularly when distinct symptoms and physical signs are absent, the differential count is of practical value in enabling us to complete a diagnosis, and in cases of sepsis, when the physical signs are distinct and definite. It is then only confirmatory and gives an added link to the chain of evidence. In doubtful cases, when a differential count is taken and found to be negative, other daily counts should be made. Another fact of importance is, that when cellular bone structures like the mastoid are involved in a septic inflammation, without involvement of the adjacent blood currents, we find that the majority of blood counts show a relatively lower polynuclear percentage than when the soft tissues are involved. The absorption of toxins is less rapid than when the soft tissues are involved. In a number of cases operated upon, an abundance of pus was found when the count showed a polynuclear percentage below 72 to 80. Brandegge⁷³ reports a case of acute brain abscess and a case of acute double mastoiditis, in which six blood counts were made in the one, and five in the other. In the one case, the relative increase in the polynuclear percentage was confirmatory of a new pus formation, as proven by the operation. In the second case, there was at first an increase in the polynuclear percentage, but not high enough to warrant surgical interference. The clinical symptoms grew in severity and preparations had been made for operation. The blood count then showed a decrease of the polynuclear percentage from 77 to 65.9 per cent; on the strength of this the operation was then postponed. The patient made an uneventful recovery. These cases most strikingly illustrated the value of the blood count.

Krishi⁷⁴ believes there is such a thing as an otitic dyspepsia. He reports several cases of purulent otitis media in infants, in whom the disease was associated with digestive disturbances, flatulence, diarrhea and emaciation which ceased when the ear disease was cured. In these cases there was no reddening of the tympanic membrane. He attributes the diarrhea to the passage of the pus into the alimentary canal by way of the Eustachian tubes.

A case of acute otitis media treated by the opsonic index method is reported by Magruder and Webb,⁷⁵ in which the microscopic examination of the pus showed almost pure cultures of pneumococci. The pa-

tient had resisted all forms of treatment for 61 days. Cultures were then taken in serum broth and plain agar. An excellent growth appeared with each. The patient's opsonic index to this growth was found to be 0.7. A vaccine was grown and standardized, according to Wright's method, and an inoculation of 14 millions was made. An increase in the aural discharge was noted for the first 24 hours; for the two days following he had intense headache. Two days later there was only a trace of the discharge; the opsonic index on that day was 1.1. Two days later no trace of the discharge was seen; ten months later there had been no recurrence of the trouble. Webb also reports that several other cases had responded to the same method of treatment. Hamilton⁷⁶ finds that in cases of otitis media in which pseudo-diphtheria bacilli predominate in the pus, there is usually a low opsonic index for these bacilli. Injection of dead cultures of the strain isolated from the patient, results in an increase of the opsonin for that strain. No ill effects appear to follow injections of moderate quantities, and in several cases apparent improvement and shortening of the course resulted; but further experience, especially in chronic cases, is necessary before a definite impression can be formed as to the value of the treatment.

The value of Bier's treatment in the treatment of middle-ear suppuration, as proven by the experiments made in Schwartz's clinic, is recorded by Froese.⁷⁷ He states that in the application of the Bier treatment in mastoid cases, the great obstacle met with is, that the blood vessels lie in bony canals and are not capable of distention. The principal domain for the Bier treatment in otology would naturally be, the simple uncomplicated cases of otitis media and the subacute mastoid cases in which a periostitis is present. Chronic cases without caries and cholesteatoma were beneficially influenced, but it must be carried out in conjunction with other treatment. Tubercular mastoid cases were not cured by this treatment. The staphylococcus infection seems to be the most benefited by this treatment.

The significance of optic neuritis in thrombosis of the cranial sinuses and internal jugular vein is discussed by Langworthy.⁷⁸ He found that in 26 cases of thrombosis of the cranial sinuses, and the internal jugular vein, only 30 per cent showed any involvement of the optic nerve. In nearly three-fourths of the cases the diagnosis had been made without any demonstrable lesions. An ordinary marked papillitis is followed by post-neuritic atrophy; but in the optic neuritis met with in thrombosis of the lateral sinus and the internal jugular vein, the reverse seems to hold good. Almost without exception, the neuritis subsides and the disc regains its normal appearance with excellent vision. He considers that when optic neuritis does occur, it is of the highest importance. Barr and Rowan,⁷⁹ in investigating the frequency and significance of optic neuritis and other changes in the retinae of patients suffering from purulent disease of the middle ear, found that vascular changes are far from uncommon. In 6 out of 100 cases there was optic neuritis, and in 21 there were vascular changes, but short of neuritis. The ear affections associated with these vascular changes in the eye were especially severe

and persistent, as shown by their course. The presence of these vascular changes, therefore, in the optic discs, would seem to give an unfavorable character to the prognosis of middle-ear diseases, that is, it is a danger signal not to be ignored. The practical lessons are: 1. That a case showing these changes in the fundus and their existence should be regarded as an additional reason for the early performance of a mastoid operation. 2. If on the other hand they show a tendency to clear off, especially with improvement in the ear condition, or if the fundus is normal in the beginning and remains so, we may with more confidence look for a favorable response to conservative treatment.

A new method of producing local anesthesia for intratympanic operations is described by Ballin.⁸⁰ After cleansing the external auditory canal, a small piece of cotton is placed deep into the canal to protect the drum. A cleft speculum is then introduced so that only the superior wall of the canal is exposed to view. With the aid of an assistant, a spray of ethyl chloride is allowed to play on the exposed surface, and as soon as the parts are well anesthetized the needle of the syringe is quickly introduced at the junction of the bony and cartilaginous canal, and the fluid is slowly injected. The author uses 10 to 15 minims of a 1 per cent solution of cocaine, to which 5 to 6 minims of adrenalin have been added. The injection must be carried out slowly so that the infiltration takes place gradually, thus avoiding any unnecessary pain. In from 5 to 10 minutes the drum is perfectly anesthetized and a paracentesis can be performed without any annoyance to the patient. This operation takes about 10 minutes, and can be employed in all adults.

Ossiculectomy in middle-ear suppuration is, according to Love,⁸¹ not often a wise procedure. When an operation is necessary at all, the mastoid operation is that of choice. When the mastoid operation is not necessary, a careful cleaning of the ear will usually procure cessation of the discharge. Ossiculectomy is only useful in a small number of cases in which the disease seems limited to the ossicles, and it is better than nothing when the mastoid operation is refused. He also claims that the period of healing is longer after ossiculectomy than after the radical mastoid operation. Randall and Crockett⁸² also speak discouragingly as to the value of ossiculectomy. Randall states that he has yet to see one successful case from that operation.

The indications for the radical mastoid operation, as presented by McKernon⁸³ before the members of the American Otological Society, 1907, and the discussion which followed show that there is a marked tendency to conservatism, and that considerable attention is being paid to the function of the ear after the operation. Heretofore, the majority of operators have been satisfied with the result when the wound cavity was completely epidermized with a cessation of the discharge, while the hearing was only of secondary importance. The work of Heath, of London, has been a great stimulus, and has done much to more clearly define the indications for the radical mastoid operation. Heath⁸⁴ and his followers maintain that in the majority of cases of chronic suppuration of the middle ear, the main seat of the trouble is in the mas-

toid antrum, and if this is eradicated the ossicles may be left in position. In many cases there is a complete cessation of the discharge with healing of the perforated drum membrane, and marked improvement of the hearing. Amberg⁸⁵ has collected the reports as regards the time of healing after the radical mastoid operation from some 30 different operators, the average time being 2 months and 26 days. He concluded that only exceptionally a chronic middle-ear suppuration which does not respond to mild treatment without more radical interference, should be allowed to continue. Held and Kopetsky⁸⁶ report a case of purulent meningitis following a radical mastoid operation which ended in recovery. The meningeal symptoms appeared two months after the operation. Lumbar puncture revealed pus and a large number of extra cellular diplococci. The eyes showed double choked discs. The dura was incised and the left ventricle was entered. The most marked improvement followed the lumbar puncture. The case slowly improved and ended in recovery.

An unusual interest has been displayed in the suppurative affections of the labyrinth. At the 1907 meeting of the American Laryngo-Rhino-Otological Society a symposium on the purulent affection of the labyrinth consecutive to diseases of the middle ear was presented. The pathology was discussed by Blake,⁸⁷ the symptomology and diagnosis by Riek, and the treatment by Richards. The latter has described in detail the various steps in the complete exenteration of the labyrinth. A contribution to the indications for opening the labyrinth is given by Uffenorrde.⁸⁸ He quotes Hinsberg's statistics of 67 labyrinth operations, with a mortality of only 3 cases. Matte⁸⁹ reports a case of harassing tinnitus in which the opening of the labyrinth was followed by relief which has now stood the test for two and one-half years.

From the foregoing, the statement attributed to Wild, that a knowledge of the internal ear was not essential in the treatment of the diseases of the ear, is no longer tenable; but, on the other hand, a knowledge of the minute anatomy is absolutely necessary.

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PATHOLOGY AND BACTERIOLOGY.

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The character of the work in pathology during the last year is such that a detailed review of the single additions to our knowledge would consist simply of short abstracts of a great number of single publications, and would not conform with the object of the yearly review of this JOURNAL. The reason why single observations in special pathology and particularly in pathologic anatomy, although important for the whole, cannot be comprised in such a review, is because of the diversity of the subjects they deal with, subjects that, in their general relation to the progress of pathology, are essential, but are merely additions to, or confirmations of knowledge already established. A review this year is more difficult than before on account of the growing consideration of the fact that pathology alone cannot penetrate into the riddles of life without becoming a part of biology and shaping its study according to the general interrelation of all phenomena of life. Pathology is no longer the study of morphologic changes, macroscopical or microscopical. It is the science that begins to embrace in its field all other phases of the problem,—the physical, chemical, physiologic and generally biologic processes occurring in health and disease. An integral part of its study must be the investigation of the functional as well as of the morphotic alterations. It is not explaining when we can recognize the presence of an alteration by definite and typical characters; what we must know is the beginning of it; the causes that lead to it and the influences that bring about the physiologic or morphologic changes. It is not sufficient to call the tubercle bacillus the causative agent of a disease; we must know what general and specific conditions obtain to make it become causative of trouble. It is not an explanation when tumor formation is judged only by pathologic-anatomic material, even if we begin with a very early tumor. It is a fact that as yet the origin of a tumor has never been watched or observed. The biologic investigation must become an important factor in pathologic work. The necessity for this is generally recognized and to it a great part of the pathologic literature of this year is devoted. In trying to do this it was soon noticed that many pathologic problems could not be logically solved without an entire knowledge of the total of the interrelation of the different factors entering into the problem. Pathology can only explain disease when it resorts to acquiring this knowledge. Disease is only a variation from so-called normal conditions, a variation called abnormal or pathologic because it exceeds the variations that are naturally present between each two organisms of the same kind. A type in the strict sense does not exist. The conditions that make these variations excessive and disease, are the subject of the modern pathologic work. As this work has necessarily to resort to physiology, chemistry, physics, besides the morphotic investigation, the attempt to solve the problem and to bring out

explanations must command the co-working of all of these sciences. This co-work is as yet not perfect, and that is the explanation of the isolation, thus far, of all of the single results that these attempts have given. They are valuable and will ultimately serve their purpose for the explanation of pathologic conditions, when they are combined and mutually arranged. This cannot be done now. Our knowledge of the intimate nature of the functional and physical and chemical processes in life, in health, and in disease, is hardly beginning; it is by no means near completion. The work of the great number of scientists investigating in this line will for a while remain inert until the way has been found to bring them in harmonious connection. It would be impossible to mention the names and works of all of them; many of them belong to our country, and a great deal has been done in Germany. At the present time the insufficient degree of knowledge, chemic and biologic, about the character and function of certain tissues leads frequently to far reaching conclusions, but which by improved and somewhat altered methods show to be unjustified. To illustrate such a difficulty, an instance may be cited that explains what is meant by the above remarks. The increase of blood pressure in Bright's disease was explained by Bier as the consequence of a reflex originating in the glomeruli and acting as a compensating factor. Others assume that a hypertrophy of the suprarenals with an increased amount of adrenalin in the blood, is at the bottom of the increase of pressure. In France some cases of nephritis in hypernephromatous formations were found. Wiesel, who took up this question^{1, 2, 3}, observed twenty cases of Bright's disease where at autopsy a hypertrophy of the medullary portions of the suprarenals was found. Working in accordance with this finding, he came to the demonstration of an adrenalin anemia in nephritis. He experimented with the serum of nephritis on the eyes of frogs and found an intense dilatation of the pupillæ. Normal serum does not produce it. He demonstrated in the nephritic serum the presence of adrenalin, and concludes that in nephritis the substance circulates in the blood, contracts the peripheral vessels, and thereby causes the increased blood pressure. Kretschmer succeeded in demonstrating that, experimentally, the injection of adrenalin into the circulation can produce a lasting increase of the blood pressure. These results were very widely accepted as an important addition to the pathology of the obscure etiology of nephritis. Naturally it called for control observations and their latest development is represented by a paper by Schlager,⁴ showing that the action of nephritic serum on the blood vessels and on blood pressure is, in most cases, slighter than that of normal serum. Only in three cases the first was more potent. Instead of assuming an increase of adrenalin in the blood of nephritics, he states that the quantity must be smaller than in normal blood, unless some other inhibitory substance is present in nephritis causing the apparent decrease. This is an instance which proves that the principles for the investigation of the functional pathologic processes are not yet fully established, owing to the great difficulty, physical and chemical, to identity

organic products. If this obtains for such definite and chemically definite substances like adrenalin, we must be more careful with substances immensely more complex, like the proteids.

The experimental work with tumors has made great strides, although the tumor problem has remained as obscure and widely discussed as before. The splendid publications by Ehrlich, reviewed last year, have led the way and have brought out a very great amount of investigations on tumors of animals of all classes. As a résumé of the results of this work a few points may be mentioned. Of first importance is the positive demonstration of immunity processes in animals (dogs, mice, etc.), first observed by Jensen and, experimentally, later studied by Ehrlich. The latter's observations have been confirmed in numerous experiments^{5, 6}, and have the more explained why the character of a malignant growth must be called parasitic, an interpretation that Ribbert advanced by showing that the tumor cells have all of the characteristic qualities that combine in the conception of parasitism. That the host is the producer of the parasite in the case of tumors is not an objection, being paralleled in the normal parasitism of the fetus in utero. The name parasite for a tumor is unobjectionable from biologic, morphologic and physiologic points of view. Of course this is only a change of a name; it does not explain. That such interrelations really exist has been proved by Ehrlich and has led him to assume an atreptic immunity due to the greater avidity of normal cells to certain important nutritive substances (Wuchsstoffe) than the tumor cells possess. The reverse condition will allow the tumor to grow. Very interesting observations were made by Beebe⁷ and Tracy⁸ in this direction on a lymphosarcoma in dogs. That the possibility of a spontaneous and also post-operative transplantation exists has been shown by Sticker by a carcinomatous growth of the external genitals of dogs, that by coitus is transmitted from the one to the other and kills the animal by metastasis. The peculiar influence that a cancer in mice has on the lack of susceptibility of the animal to other inoculations, the increase of the virulence of a tumor after continued transplantations, and many other questions, have received much attention, especially by Michaelis,⁹ Harland,¹⁰ Bashford,¹¹ although no uniformity of opinion or explanation has yet been reached. A very peculiar condition is the absence of a definite specificity of this immunity. Tissue of a sarcoma will protect against a carcinoma, and vice versa; Ehrlich has found a similar status for a malignant chondroma. The most surprising feature of the question is, that it was found that even normal tissues of the embryos of mice will protect; that even liver tissue of an adult mouse will have this effect when injected into an inoculated mouse. The explanation that Ehrlich gives is based on his hypothesis of atreptic immunity; Bashford and v. Dungern contradict this and attribute it to other causes. The most interesting observation made in this work is that in Ehrlich's¹² laboratory, for the first time, in a series of transplantations of a certain carcinoma from mouse to mouse, a typical sarcoma grew mixed with the other tumor, and, in the later implantations finally wedged out the latter altogether.

The observation has been made also by Bashford. These observations, the correctness of which cannot be doubted in view of the careful work done by all parties, lead to the question of the origin of this sarcoma, growing secondarily after the transplantation of a pure carcinoma in numerous passages. Ehrlich sees two possibilities; either the presence of a sarcoma-anlage primarily in the inoculated carcinoma tissue, or a later stimulation of the connective tissue stroma of the cancer to sarcomatous "change." In his latest publication he prefers the latter explanation.

This discovery leads to the investigation and discussion of the origin of tumors. While generally this problem has been touched very little, it cannot be denied that the tendency almost everywhere is towards the assumption of fetal displacement of tissue as the origin. Although no direct proof of this theory is extant, and no observer has seen the first beginning of a tumor, Bormann has shown that cancers consisting in section of only about two dozen cells, have, at this early stage, their typical characters, and appear absolutely independent from the surrounding tissue. In spite of the constant objections of Hauser, it has never been demonstrated that tissue surrounding a tumor partakes, by malignant changes, in the growth and enlargement of the tumor. A transition from normal cells to tumor cells cannot be demonstrated. From the beginning, therefore, a tumor is a tumor, independent from and not physiologically connected with the tissues in which it appears. This is the salient point established. A tumor always grows only and alone by proliferation of its own cells.

The question whether only embryonic cells or also normal adult cells, can undergo tumor formation cannot be decided. The theory of Ribbert that normal epithelia can be disconnected from their physiologic arrangement, and under the stimulus of chronic irritation by inflammatory processes, separate, proliferate and finally become malignant, is in agreement with the growing importance of the interrelation of the different cells of a tissue between themselves. Only by such mutual tension or pressure can the unlimited proliferation be checked. A skin graft can by continued transplantation form a million times the amount of tissue it would have reached during a life time in the area from which it was taken. Such an interrelation must exist; its physical or chemical explanation will be found sooner or later. His experiments on the relative importance of regeneration, especially in the lower classes of vertebrates, have led Morgan¹³ to accept similar views of a mutual dynamic relation between the cells of an organism. Dungern,¹⁴ in an exceedingly interesting book on the nature of malignant tumors, in which is found the most objective critic of every suggestion ever made on the origin of tumors, has considered the question on the basis of experiments made by him. Their especial arrangement cannot be detailed here, but the results obtained led him to conclusions of the following nature. The authors show that by suitable use of different stimuli, qualitative changes of cells can be produced that can be recognized even morphologically. It is of peculiar interest that the same changes occur in the tissues of old indi-

viduals. The cells in these are almost insusceptible to all of the stimuli utilized; only more intense stimuli will cause proliferation. Weigert in his time had taught that such stimuli brought about a lowering of the inhibitory quality inherent in the cells, so that proliferation is the consequence. In normal cells the adaptation to normal inhibition of growth is quickly achieved, even when these cells are removed from their connection and transplanted into another tissue. Dungern asserts that the separation of cells from a physiologic connection alone never can, as Ribbert believed, produce a fundamental change in the form of growth of these cells. The change cannot be brought out by a change of the correlation of the cell, but must always be caused by a change of their reactive capacity. The normal reactive capacity is the important factor that regulates the processes of growth. The principle of the histogenetic equilibrium is based on it. Continuously rapid proliferation characterizes the malignant tumors, as the investigation of Ehrlich and Apolant have shown. This rapid proliferation can only be brought on by damage to or destruction of the inhibitory capacity and by the loss of the cell of the adaptive and restitutive capacity. Proliferation, endless and limitless, must be the consequence. The decrease of the restitutory power can occur also in normal cells, if stimuli of high intensity are applied in short succession, so as not to allow the cells to recuperate. It is conceivable that stimuli exist which act only on this capacity and leave the other factors intact. This may play a part in the formation of a tumor. No explanation of tumor formation can be accepted but one that figures with the biologic change of tissue cells. The similarity between tumor cells and embryonic cells assumed by many authors does not exist; in studying the reaction from a stimulus for growth the author found that the tumor cells behave in an opposite way to that of embryonic cells. It is unnecessary to insist on the necessity of controlling von Dungern's and Werner's experiments; when confirmed their investigations will form the possibility to decide about the question of tumor formation from embryonically misplaced cells, or from adult tissue cells, deprived by some external or internal influence of their capacity of afterwards restituting their inhibiting factor. If it were not for the unobjectionable experiments reported in the book, the explanation, although biologically feasible, would appear as a theoretic possibility only.

The opinion that external noxes may be the cause of carcinomatous behavior of epithelium has for a time been greatly strengthened by the work of Fischer, reported last year, on the production of epithelioma-like proliferations in the ear of rabbits. The method used was the subepithelial injection in the ear, under considerable pressure, of a solution of a fat-staining substance, the scarlet red or the sudan red in pure olive oil. The effect thus caused was found in the dipping down of the cutaneous epithelium by the growth of the interpapillary processes, forming around fatglobules and masses, epithelial structures of an epitheliomatous character. In some cases where the cartilage was injured by the needle, such epitheliomatous masses were found in the cartilage. Microscopically, the picture is very suggestive as the reviewer was himself able to ob-

serve. Others more or less confirmed the observations of Fischer, although negative results were reported when the oil was injected under slight pressure. McConnell¹⁵ in this country confirmed, also, the correctness of Fischer's report, and was inclined to believe that the formations produced were suggestive of a carcinomatous character, although expressing his opinion that a definite decision could not be arrived at from them. Fischer¹⁶ had no doubt that these formations were representative of a malignant type of proliferation, and formed on this belief his attraxin hypothesis. He explained the condition by the presence of certain substances, called by him "attraxins," that caused the epithelial cells to grow towards them, in this way being separated from their physiologic inhibition by other cells to which they belonged, and then exerting their innate capacity of proliferation without restraint. The theory comprised a great field and had a chance to become accepted as possibly corresponding to the truth, if many of its evidences had not been proved as incorrectly interpreted and not conclusive. The fact was that the proliferations produced did not extend, but after a short time were obliterated by atrophy; that this apparently malignant character was definitely simply produced by mechanical factors, and that the proliferation was, more or less, nothing but the ordinary proliferation of the epithelium that we see so frequently in certain inflammatory conditions of the skin. Fischer's work is valuable by showing what agents can cause a proliferation of epithelium, but it throws no light on the causation of cancer. Snow¹⁷ has come to the same conclusions expressed here. As to the etiology of cancer, it may be mentioned that Gaylord¹⁸ and others have reported the finding of a spirochæte in a number of mouse carcinomata. Whether they have any etiological meaning is a question that cannot be answered at the present time. Dungern suggests that the origin of carcinoma, that is the permanent destruction of the adaptation of cells to the action of the destroying stimulus for the inhibitory capacity, may be of bacterial origin. Proescher and White¹⁹ have published similar findings in a few cases of acute lymphatic leukaemia and other lymphatic hyperplasias. What the meaning of these observations is cannot be told at the present. For the lymphatic pathologic conditions a possibility obtains; whether it is so in cancer time will show.* That malignancy is not restricted to sarcoma and carcinoma is well known as occurrences of malignancy of myomata, lipomata and chondromata have been found. It is interesting and important to add to the list and so reference may be made to a paper published by Borrmann.²⁰ He gives the history of a subcutaneous hæmangioma of the breast in a young woman, that, in spite of several operations, always recurred and led to death after three years by extensive metastasis in both lungs. The histologic structure of the tumor differed in nothing from that of a simple

*After finishing this review another paper by these authors announces the same findings in other cases, and at the same time the production of typical lesions by the inoculation into animals of material taken from these cases. The lesions were similar to those in man and contained spirochætæ in large numbers.

angioma; its character was the same in all of the metastases. The impression that all of these cases impart is that malignancy is not limited to certain cell types, but is a quality generally possessed by all genuine blastomata.

As a work that in the great demands on time, large knowledge of literature and objective critic of the author, is unexcelled in medicine, may be mentioned, the history of carcinoma from the oldest to modern times, written by Jacob Wolff;²¹ a big volume that must have taken many years to complete. It will have lasting value as a source of reference to everybody interested in cancer questions. Mentioned as a curiosity is the paper of Westenhoeffer,²² who makes primitive cells ("urzellen") the cause of tumors. A paper by Ruelf²³ gives an answer to it.

Voit²⁴ in a lecture on the conception of mesenchyme and the organs developed from it, calls to the attention of embryologists the fact that the mesenchyme is not a uniform structure, but that it is composed of elements of ectoderm and entoderm. The elements of both are mixed in forming the mesenchyme and the structures arising from it, in some cases, have been proved to arise from elements derived from two germinal layers. A detailed review is not in place here; however, it must be mentioned that the changes in the conception of the mesenchyme may have some influence on the classification of a number of tumors that cannot be arranged according to the accepted rules.

It will be remembered that Ribbert's attack on the conception, that the changes of an inflammatory reaction are to be considered as protective, that is, as a means of utilizing given conditions, was not intended to bring out a new view on inflammation, but only an attempt to keep this humanization of natural processes in science in its proper limits. That really, the neovitalistic tendency today, especially as enunciated by Reinke and Driesch, is a great danger to scientific work is clear; its effect is the same on pathology. We are too prone to work for the purpose of some phenomenon and forget, often, in doing this, the most essential features of a problem. Jensen,²⁴ of Breslau, in a fascinating book, has brought this subject to a thorough discussion, and shows definitely, by strong logic, how untenable are many favorite and apparently valuable theories about development, heredity and utility (Zweckmaessigkeit). He opposes to these merely speculative "fundaments," the physico-chemical conception, for the reason that the inner factors of development consist in the configuration and energy relations of the living system. He ridicules especially Weissman's ideas and the importance that today is attributed to the role of the nucleus and the chromosomes in heredity. Jensen's book is exceedingly positive, but in every word based on correct thoughts and knowledge. The tendency to the neovitalistic ideas is very insinuating in pathologic problems, especially in the work done today on changes from normal to pathologic conditions. The book ought to be widely read.

Before entering into some remarks on the work in pathologic anatomy, it may be desirable to call attention to a problem, not directly pathologic, but touching pathology as nearly as any other branch of biology. It is

the increasing evidence of the frequency of the occurrence of continuity of cells in various organs and places of the body, as a continuity not showing separate cells, but a uniform mass of cytoplasm, either appearing as compact masses, or divided into cell-like portions and connected by protoplasmic strands. The number of such observations is not great, but it is of great importance in a problem that is beginning to dawn in the background of our basic principles of organic life, the cell theory. The problem is this: Is it true that the body of an organism is composed of cells, or does the body form the cells for mechanical, physical or chemical reasons? So many phenomena in the construction of an organism are hard, or impossible to explain by a connection of cells; I need not mention here more than the nervous system. The problem will become prominent in the near future. Terry²⁵ has demonstrated in a fish (*batrachus*), that the neuroglia forms a typical syncytium with no divisions in cells and with the nuclei irregularly distributed. His in 1886 had already found a syncytium (*myelospongium*) in the human embryo, and Hardesty had found that the neuroglia of the pig was also syncytial. If further investigations with suitable material will make this the universal condition, a very important advance in the solution of the problem will be made.

Remarkable advance in the problems of pathologic anatomy has not occurred; in fact, none of the old questions pertaining to many of the obscure conditions, has been answered. In regard to the circulatory system two publications are of note. The first is a classic product of the work of an anatomist and a clinician. Hirsch and Spalteholz²⁶ have investigated the assumption, usually pronounced, that the coronary arteries in their branches do not show any anastomoses, at least not of sufficient extent to counteract the occlusion of one of the branches. They were led to this investigation by the frequently found extensive infarcts, without any interference with the functional quality of the heart muscle. If occlusion of one of the larger strands could not be compensated by sufficient anastomotic conditions, such a result could not be the outcome. In a very original and ingenious way they caused this condition in animals by ligation of one of the first ramifications of one of the coronaries, and studied the effect in the specimen after it had been injected and afterwards made translucent by a special method. In this way the filled blood vessels can be followed through the whole heart in small animals, and at least through the thickness of the wall of a heart in animals of larger size. In normal animals they found a very copious system of anastomoses, not of small caliber but rather large, and fully sufficient to provide for the area cut off by the thrombus or by ligation. This accounts, too, for the apparent incongruity between the site of obstruction and that of the impact. The latter is often at a great distance from this site. Very interesting are the investigations Wiesel²⁷ has published on the lesions found in the arterial system after acute infectious diseases. In about 80 autopsies on cases of diphtheria, scarlatina and other acute infections (age from 3 to 25 years), he examined the arterial vessels and found the arteries greatly altered in all

of them. The changes appeared as a degenerative process in the musculature and the elastic fibres of the media; here they appeared first, and only sometimes involved the intima. This degeneration is focal and can lead to a necrosis of the vascular wall. In marked cases the lesions can be recognized even macroscopically. All of the arteries, down to the caliber of a digital artery, are affected; the aorta, cerebral and heart vessels, also, are highly involved. Wiesel differentiates two groups, one with prominent degeneration of the elastic fibres (diphtheria, typhoid, pneumonia, influenza), and another with main involvement of the muscular tissue (scarlatina, sepsis, etc.). The discovery of this arteritis, perhaps accounts for the cases lately described by several observers of juvenile arteriosclerosis, the more so, since in the majority of these cases the absence of a chronic nephritis was established. The lesions of this arteriosclerosis are, however, different from that of old age, by beginning always in the media and not in the intima, as was demonstrated by Jones²⁸ three years ago. The author gives the name of arteritis chronica post infectiosa to the affection and on account of its frequent occurrence, calls for a thorough investigation as sometimes it is the cause of death from acute infections.

As the effect of adrenalin on arterial lesions there is recognized some difficulty in drawing conclusions from experiments made on rabbits. Although results are on the average uniform, the fact cannot be ignored that rabbits, either killed in normal condition for some purpose, or dying from other causes, on autopsy show lesions that are absolutely identical with those produced by adrenalin injections. Kaiserling²⁹ has observed a few such cases, and Ophuels³⁰ reports one of the same character. It seems necessary to establish the percentage of such lesions in untreated rabbits, especially in the single races, before reliable conclusions can be drawn. The reviewer does not doubt the correctness of the conclusions from the experiments reported so far, still in important questions this point may lead to error.

The character of the hematopoietic structures and the relation to each other of the different forms of leucocytic elements, as well as of those cells appearing in inflammatory conditions, remains just as it was before. The consensus of opinion of the majority of writers is for adherence to Ehrlich's statements of the histogenetic difference between the so-called lymphocytic and the polynuclear cells, the latter with their premature stages (myelocytes, etc.). That is, at least, the conclusion to which Helly³¹ comes in his dealing with the relations of the blood-forming tissues to diseases of the blood. The confusion about the origin and derivation of cells occurring in inflammatory tissue, the plasma-cells, mastcells, polyblasts, etc., is as great as before. The assertion is still made by some that plasmacells are able to change in or arise from connective tissue cells, while others, and apparently more correctly, connect them with the small lymphocytic elements. That there is no direct possibility of reaching a definite conclusion has been shown lately by Councilman through his study of the lymphatic tissue in infectious diseases. He is satisfied with differentiating different forms without forming an

opinion on their histogenetic character. It would be a great satisfaction to finally arrive at a positive knowledge of these interrelations or differences, as, for instance, the assertion that red and white cells arise from the same matrix. But for the present it seems impossible. The apodictic assertions of Pappenheim³² are so subjective that they cannot be accepted as representing the real condition.

After four years the method of Arneth who has tried to establish, from the nuclear character of the polynuclear neutrophilous leucocytes in the blood, a system of diagnosis and also prognosis of a great number, in fact, theoretically all pathologic processes, a method based solely on the more or less advanced nuclear distortion of these leucocytes and their relative percentage, has not succeeded in making itself a recognized addition to our knowledge. Although many papers have been published in confirmation, their theoretic value is nil. We know too little about the character and the causes of the nuclear changes in the circulating blood. We know, furthermore, too little about the function of the leucocytes (notwithstanding the claims of the opsonists) to base important measures and predictions upon the presence of a greater or less number of leucocytes with a nucleus appearing in two to five or more portions connected by chromatin bands. Paulinek³³ has made careful and extended control investigations and concluded that the difference in the condition of the nuclei is merely accidental and without significance as to the character or course of a pathologic process.

It is still a point to consider their total number and the relative proportion to the different other forms of white blood cells, yet even that, in many conditions, is of little importance and only relative. Theoretically the value of blood examination for diagnostic purposes in many pathologic processes, is not to be considered. The value in others is only based on experience; it is empiric and demonstration of its justification has not been established. This does not of course obtain for the information that the biologic character of the blood may give on this phase of the question; the bacteriologic part of this review will have something to say on this subject.

The subject of blood diseases has had much attention by individual observers. For the leukemias general consensus about classification, as to etiology and relations to pseudoleukemia, has not been reached. A paper of McCallum³⁴ offers a prospect that the diseases of the hematopoietic tissue and of the lymphatic apparatus can be grouped together in a definite form. The author's remarks on the confusion dominating the literature of lymphatic diseases are very true; he gives a lucid description of the definite characterization of pseudoleukemia and lymphosarcomatosis from cases observed by him. The misfortune is that the literature so far published on the subject is so varying in exactness of description that it will be of little value in the final elucidation of the forms of lymphatic hyperplasia. The finding of a spirochete in three cases of Hodgkin's disease and one case of acute lymphatic leukemia has been mentioned before. That even pernicious anemia is a different thing, in the minds of different observers, was plainly shown in

a discussion following a paper read by Plehn³⁵ in which he established two different forms of the disease. The discussion by a number of well-known hematologists demonstrated the uncertainty about the really essential pathologic conditions of this form of anemia and the most surprising thing was that the most essential of all, and the one that must strike one's eyes at the first glance, is the typical character in shape and size of the red cells in pernicious anemia; a point on which Ehrlich established a concinct picture of the disease was not touched upon. If pernicious anemia shall be established as a pathologic entity, which it is clinically and pathologically, a discussion of the diagnosis is absolutely unnecessary, and the long time spent on it in Berlin this year was entirely wasted. An interesting paper about the embyryonal character of the red corpuscles in pernicious anemia was written by Engel.³⁶

Interesting are two observations in regard to pancreatic diseases. Fat necrosis was pronounced almost unanimously an effect of pancreatic disease. It is true that certain occurrences of this necrosis were known without any noticeable lesion of the pancreas, but it could not be denied that in the overwhelming majority the necrosis either was directly caused by disease of this organ, or, where the organ appeared normal, at least was always located in the immediate neighborhood of it, so that the suggestion of only functional anomaly was justified. These observations did not invalidate Opie's assertions and theory. When, however, multiple fat necrosis occurring in the skin is observed without other lesions, and above all with a normal pancreas, this theory must be at least modified. Fabyan³⁷ reports a case in an infant some seven weeks old, that from the second month after birth began to show on the skin (cheeks, arms, legs, back) large and small peculiar lesions at that time called abscesses. The infant died by accident, and the autopsy by Fabyan revealed these abscesses to be typical fat necroses. Naturally the investigation of the whole body was very thorough, but neither macroscopically nor microscopically could anything abnormal be found except a few petechial hemorrhages on the heart (cause of death suffocation). The other observation was made by Lazarus³⁸ who, in producing diabetes by phloridzin could regularly produce an enormous hypertrophy of the islands of Langerhans. The theory of the causation of true diabetes by atrophy, or other defunctionating factors acting on these islands, held by Opie and others, has, on the whole, not received much attention this year. In several publications, however, single cases are reported, where the conditions pictured did not obtain. As we know that typical diabetes sometimes is nervous in origin, and can be produced by lesion of a certain place of the fourth ventricle, the opinion that a diabetic metabolic disturbance can be due to different causes, among them, perhaps, to this atrophy of the Langerhans islands, should be followed.

Tuberculosis may again be a link in the consideration of the pathologic and the bacteriologic work done this year. The real progress in the dealing with this disease can only come about by a union of the two ways of investigation. It is the pathologic side of the question that has

stood in the foreground this year, due to the great shaking up of seemingly established principles by the publications of Behring and Koch a few years ago. Pathology had to determine how the entrance of the virus was effected, where the primary penetration of the bacilli occurred; in other words, the question had to be settled, whether the old idea of entrance through the respiratory tract (so-called inhalation) or entrance through the intestines, obtained. The latter, for two years, has, seemingly, advanced in importance by a large number of experiments with animals, in which, by the introduction of tubercle bacilli into the stomach, or directly into the intestine, tuberculous infection was produced that resulted in pulmonary tuberculosis. In Germany (Aufrecht³⁹) a number of investigators fought for the intestinal origin of the majority of pulmonary infections, and these stand in the foreground in considering human tuberculosis. It was this experimental work, and the belief that bovine bacilli played a great part in the origin of human tuberculosis, especially during childhood, as they are certainly multifariously introduced with the milk into the intestine that lead to these thoughts. In France, Calmette⁴⁰ leads a large number of followers, asserting that inhalation tuberculosis is rare, and that the intestinal infection is the rule.

From the beginning of this dissension of opinions, pathology had to decide for inhalation as the source of human tuberculosis. It is not to be thought that an infection should start in the alimentary tract leaving, in the great majority of cases, the whole tract, the abdominal organs and even the mesenteric lymphatic apparatus intact and do its work later in the lungs. The whole character of the human disease is chronic, that is, a gradual extending from one place to the other, a slow creeping and burrowing, leaving destruction and death of tissues in its path. Until it reaches a distant place many years must often elapse; very often, even in most cases it does not reach them at all. We find in autopsies of pulmonary tuberculosis frequently not more than a few small, recent tuberculous lesions, always in their histologic character, much younger than the lesions in the lungs; very often none at all are found. Of course, there are exceptions to this, and lesions are more advanced, but then there is no evidence for a primary entrance through the intestine; the latter is almost always intact; only the mesenteric glands are infected. Fresh lesions of the mucosa are more frequently found in later stages, due to the swallowing of the detritus from the pulmonary foci. The inhalation experiments, made by Cornet years ago, demonstrated typically the possibility of infection by inhalation. The contradiction between the modern work on producing pulmonary tuberculosis by intestinal infection, and the experience and the solidarity of all observations for many years before in favor of respiratory infection, has not been explained. That it ought to be possible to explain this, was the conviction of R. Pfeiffer,⁴¹ who considered the question by comparing these artificial intestinal infections with the natural way of infection in man and animal. He was assisted in this attempt by the simultaneous determination by others of the nearly exact quantity of virus that must be introduced in order to cause an infection. For guinea-pigs the num-

ber of tubercle bacilli that are necessary to infect must not be smaller than four hundred bacilli. A less number may cause a local process, but will not lead to a dissemination of the disease. As the guinea-pig is the most susceptible animal we know for tuberculous infection, and on account of the great resistance of the human being against infection, the estimation for the human being will reach only moderate figures. The proof for this lies in the high percentage (about 95 per cent of healed tuberculous lesions found after death from other causes than tuberculosis. So Pfeiffer arranged his experiments by trying to produce a natural infection in guinea-pigs in both ways. A series of 25 animals was exposed for about ten minutes at a distance of 15 cc. from the nozzle of the spray, in the open air, to the spray of an emulsion that contained about 30,000 bacilli in 1 cc. Altogether 1 cc. was used, so that if all bacilli had been inhaled by the 25 guinea-pigs, each would have taken about 1,000 of them. As this assumption is out of the question, the estimate may be placed at 400. Another series was by tube injected into the stomach, with 10 cc. of the same emulsion (300,000 bacilli). The result was that when killed, after about ten weeks, all of the first series showed caseous nodules of large size in both lungs. In most of them the bronchial glands were involved. In two or three, small hyaline tubercles were found, in very small numbers, on liver and spleen. The series with intestinal infection behaved in this way: Twenty-two of the animals were absolutely intact. In three some mesenterial glands had been infected and in one of them a few large caseous tubercles were found in the lungs. The latter had the size of those in the inhalation animals, and as these two struggled while inserting the tube, some of the emulsion may have entered the larynx. The result is so clear and patent that with one glance the answer is given. The positive results obtained by others do not correspond to natural conditions and cannot be compared with them. In these experiments the virus introduced consisted of such an excessive amount (many millions of bacilli) that necessarily a susceptible animal must be overwhelmed by it. Under natural conditions such a process is impossible. Pfeiffer's stomach animals received 300,000 bacilli and 22 of 25 remained well. If we consider the number of bacilli present in 1 cc. of human sputum and are aware that most of the exudate is swallowed regularly with the saliva, and compare with this the comparatively rare secondary infection of the intestine, everything is said about the intestinal origin of pulmonary tuberculosis. That it occurs, especially in young children, there is no doubt, and nobody denies it, but in only a few exceptions could pathologic proof be shown that the intestine produced the pulmonary secondary infection. Inhalation of the tubercle bacillus will be, in the future, as it has been since the time of Koch's discovery, the object of preventive measures until the time comes when the diagnosis will be made before the sputum shows the bacillus, and until that time the patient will be harmless to his surroundings. Prevention ought to work constantly in this direction; the medical profession, in the first place, ought to achieve this by early diagnosis and by submitting early cases to procedures, like those used

today for open tuberculosis of mostly doomed individuals. That the introduction by inhalation is in many ways possible, is known. But more importance ought to be given to the droplet dissemination by the talking, laughing and coughing of a patient. The number of bacilli expelled in this way, and floating for hours in the air, is sometimes remarkably great, and the danger of inhalation a certainty. A valuable contribution to this subject is the paper of H. Ziesche.⁴² To cite, singly, the names of all of the men that have worked during the year on the discussed incisively important problem would be useless. The gist of their conclusions was given.⁴³

The second question is the truth or untruth of Behring's assertion that tuberculous infection is almost always acquired during childhood, and that the later tubercloses are in direct or indirect connection with it. This is hard to prove or disprove directly. But if experience is of any value and life histories mean anything, we can confidently assert that Behring is wrong and that most tuberculous infections in adults are acquired long after childhood has been passed. Of course, we know that a focus may for many years remain latent and that almost everyone of us during life has had, or still has, such a focus.

The question of the influence of bovine bacilli on human tuberculosis can be discussed in a few words. Correct consideration of the question shows only the improbability of such a possibility. We have sufficient knowledge today of the chances we are said to run daily with food from cattle. That this fear is absolutely unjustified to that extent is today certain. That now and then the occurrence of infection through milk, etc., has been demonstrated is of no great importance at present, in view of the ease with which the infection by human bacilli can be proven. As a general sanitary measure, the elimination of bovine disease is advisable; as influencing the rate of human tuberculosis, it should not be considered. The subject of tuberculosis cannot be left without at least mentioning two methods of diagnosis of early or obscure tuberculosis, that lately have become known, but about which as yet so little experience obtains that general conclusions must be drawn very carefully. The prospect, however, that both of them will in the future form an important addition to the means of fighting against the occurrence of open tuberculosis is very great and almost certain. The first method, described by van Pirquet,⁴⁴ is the utilization of the sensibility of the skin of tuberculous persons to tuberculin. The fundaments for the method may be found in the author's book; the publication of the method itself is only about six months old. It consists in a slight abrasion of the epithelium in the skin of the arm, or other place, and the contact of the abraded surface with a small amount (one drop) of the old tuberculin. The latter is allowed to penetrate thoroughly and be absorbed into the cutis. After a number of days (5 to 10) the locus of application becomes red, and forms, after a few days, a small nodular, papular and often vesicular, lesion; while a surface abraded in the neighborhood of this lesion and only kept in contact with sterile salt solution will not show any reaction. The lesions heal

gradually and no general effects are present during this reaction. It is positive in cases where the tuberculous process has not advanced too far, and especially valuable in infancy and childhood. Early tuberculosis in adults, however, will also show the same reaction. While the majority of reports are confirmative, some have met with failure. It is too early to speak the last word, but as said before, there is much reason to expect that the method will soon be generally used to the benefit of the race. The histologic character of the small lesion partakes of the nature of a tuberculous inflammation similar to that caused by killed tubercle bacilli.

The other method, devised by Calmette, of Paris, uses either the old tuberculin or the new tuberculin (T. R.). A small quantity of one of the substances is instilled into the eye over the conjunctiva. The result is a more or less marked conjunctival redness and swelling and sometimes a conjunctivitis, that always passes off in a short time, and without any general reaction. Which of these two methods will prove to be the most useful one cannot be said at this time.

The new edition of G. Cornet's book,⁴⁵ a large volume, with vast experience and practical and experimental work as its base, really gives everything of our present knowledge on all features of tuberculosis. For reference no book is better adapted.

In other diseases bacteriology has made some strides forward, not so much in special bacteriologic work, although there, too, advances are marked, but mainly in the line of the biologic interrelation between host and infecting micro-organisms. The work done continues along the lines outlined by Ehrlich. Although the idea that this great man's explanations of the phenomena studied is the so-called true explanation, can hardly be entertained by any thinking worker, a point, of which Ehrlich himself is fully aware by calling his theory a heuristic theory, it is an attempt at explanation that, from a physical and chemical basis, has been built up with such a degree of dexterity, logic and originality, that it has led to the establishing of some immensely important and revolutionizing facts, that on Ehrlich's and his followers work every future study of the same subject must be based, in fact could not be achieved without it. The attempts to identify the phenomenon with physical-chemical reactions has utterly failed, and even the endeavor to liken them to the behavior of colloid substances is unsatisfactory on account of the confusion obtaining on the physical and chemical nature of the colloids themselves. There is one factor that cannot be explained as yet by any exact science that is the specificity of the processes observed, that goes deeper than is ordinarily imagined. It is, of course, evident that this factor does not find any explanation in Ehrlich's theory, itself; it is, however, a fact observed with such exactness and such reliability, that it is not to be doubted; that it is there, is proved by the effect it has had on carrying this work to a line that only ten years ago would have been thought fantastic and beyond the range of logic and science. Of these late developments at least one may be to some extent discussed here. It was found by Bordet that bacteria have

the power to absorb complement and by their presence to make the reaction of hemolysis negative, if they are suspended in a specific immune serum, or have been charged with amboceptors. The binding of receptors to amboceptors results in a great avidity for all of the complement; this phenomenon occurs only when the one is specifically adapted to the other. If an immune serum not specific for the bacterium is used, the hemolysis will take place. This was the discovery of a method that established differences in character of very similar bacteria with a nearly absolute reliability. It was possible to discover in a suspected material the presence of specific bacteria by this method, although the organisms themselves could not be found. On the other hand, doubtful forms could in this way be identified. As valuable as this method is, it has a limited range in its use; it is complicated and serves with bacteria as such only somewhat better than other methods more convenient. The specificity of this action and its distinctness in the minutest quantities of bacterial material called for wider application. Wassermann investigated whether only bacteria, as such, gave this reaction, or whether the secretory or autolytic products, or the substances arising from their disintegration, could be utilized for this purpose. He found that the reaction was just as delicate with extracts of bacteria, sharper because the dilution of the extract could be carried out with much greater exactness. After the method had been tried with the extracts of a number of bacteria, and in all of them had been found reliable, the hope naturally arose, that even in pathologic conditions in which we cannot cultivate the specific agent, or in those in which the agent is not known it might be useful. As it was known that a specific antigen (receptor) and antibody were necessary to allow of the interference with hemolysis, and as in any infected organism, the first must be present, and, perhaps, the second too, the way was opened for exact experimentation. For tuberculosis, where, to a limited extent, the presence of tuberculin and antituberculin could be demonstrated, owing to the great differences in the single cases of the course of the tuberculous process, the results were not uniform; and as the causes for this insufficiency can only be guessed at, not exactly determined, I think for tuberculosis the reaction will be of use only in a limited number of advanced cases, but always in early cases.

With the difficulties of diagnosis in supposed syphilitic and so-called parasyphilitic conditions, where the clinical or microscopic determination of the origin is very often not directly demonstrable, except by comparison, it was a necessary thing to try to use the absorption of complements for this purpose. We long knew that lues is contagious; we know its etiology; but we can not yet cultivate the spirochæte pallida. The clinical appearance of syphilis is altogether that of an infection with processes similar to other infections. The attempt was first made with established syphilis. In the beginning the positive results were not so frequent. The explanation was that in most of the luetic cases a more or less intense antiluetic treatment had preceded the examination. For examination the serum, cerebro-spinal fluid and extracts of

syphilitic organs, were used. The antibody was given by the serum of monkeys infected with syphilis and recovering, and from rabbits injected for some time with syphilitic material. The hemolytic system was always the same; the possible mistakes were excluded by a great number of control tests and in this way formed a basis for wider investigation, making a positive result always definite, but allowing for few failures from causes that either can be explained or are obscure. Wassermann⁴⁵ and his associates, Plaut and Bruck, then commenced to examine the cerebro-spinal fluid, and sometimes the serum, of cases of tabes and general paralysis. Their first results were surprising, as in almost all of them a positive reaction was easily established. Since the first communications on the subject, a number of investigations were made by Citron, Morgenroth and others,^{46, 47} Citron using the serum, but sometimes also the cerebro-spinal fluid. The clinical suspicion and the strong belief that these two diseases occurred almost always in a connection with a previous luetic infection, and that, therefore, they were specific sequelæ of this infection in all cases, seemingly is confirmed by the complement fixation reaction. The question is whether this is only a coincidence, or a definite specific so-called parasymphilitic process. That is not proved directly, but experience teaches that similar relations are found in many other pathologic conditions of an infectious character. Theoretically it is not sure that the antigen and antibodies reaction in syphilitic material really represents the products of the spirochæte and the specific receptors, because it is present in the infected organism. To prove this, it is necessary to have pure cultures of the organism and to carry out the investigations with their products. It is possible that the reaction-producing element has nothing to do with the substance of the spirochæte, but with absolute certainty is only found in, and, therefore, only produced in the organism of luetics. Its practical importance is firmly established, and its causative connection in its presence at the time of so-called parasymphilitic conditions, justifies the conclusions that they are the cause of the infection with that organism that only can produce lues. The hesitation to accept the positive reaction in almost all cases of tabes and of general progressive paralysis as proof is less justified than in many other conditions where we consider the presence of a certain factor alone as positive evidence of the correctness of the specification of the condition. Here we have to deal with a material that is found nowhere but in the substance of a syphilitic individual. At least no proof to the contrary has been made known, and the point is that this specificity is the main factor that has up to this day asserted its right to exist in a consideration of the problems of infection and to be its pivoting point. It does not have an absolute meaning; nothing has, but as far as we can go with our means or abilities, it is the only solution of the problem, and cannot be contradicted with similar weight from any other side, especially from statistical and empirical sources.

For other infectious processes the late biologic status is about the same as it was last year. Nothing absolutely new has come out, and little changes in single questions have not altered the picture. Our

knowledge about the meningococcus has been greatly widened, mainly through the success in finding suitable media for growth sufficient in quantity for animal experimentation. The animal inoculations, especially in monkeys, were reported last year (Flexner). They and other investigators have altered the conception of the seat of the disease in the nervous system to a septicæmia, like in typhoid. The case reported by Simon⁴⁸ cannot be counted because no culture was made. In other cases cultures from the blood have been positive. A very peculiar location of the main focus of this coccus was reported by Pick,⁴⁹ where a large pus production by meningococcus took place within the seminal vesicles. The relation of the meningococcus to the gonococcus has been carefully studied; it appears certain that a close relationship obtains between them, showing differences only in the character of the growth in cultures and by the agglutination. The one agglutinates the other, but much less than with its own specific serum. Flexner and Wassermann⁵⁰ have tried to produce immune sera by inoculating horses and goats. While in animal experimentation these sera prophylactically and shortly after the inoculation of the virus, prove effective, in the human disease the results (few) have been unsatisfactory. The reason may be the lateness of the time in which the injections were made.

As to typhoid and pneumonia, nothing has changed; details have improved, especially the cultivation of the bacillus from the blood. The stress of the endeavor to eliminate typhoid is today laid more on the prevention of infection by direct or indirect contact, and not on the water. It is an established fact that water infection always means an epidemic, while the typhoid that obtains here as well as in Europe is merely endemic and transmitted directly or indirectly from one patient to the other. An epidemic of typhoid is greatly different in fulminant dissemination from the ordinary endemic typhoid course, which varies little throughout the year, and is influenced in this simply by climatic and sanitary conditions. As to the Pfeiffer's bacillus of influenza, it was known that it could act also as a pyogenic organism. Cases of pure influenza peritonitis have been reported, one in St. Louis by Hill and the reviewer. A true influenza sepsis is lately described by Saathoff⁵¹ in which the bacilli have been cultivated from the blood. This paper is interesting because the author succeeded for the first time in producing with his culture in rabbits, an influenza-septicemia with death, and was able to increase the virulence by successive inoculations. The rabbit influenza has no symptoms analogous to the disease in man. Pneumonia is the same as it always was. The great collective work done in the eastern part of our country has not in a single point changed our views. The organism of whooping cough is not found with certainty. Bordet⁵² seemingly has succeeded in isolating a minute bacillus that, from its pathologic effect on animals, may finally be pronounced the etiologic agent of this disease. All the other whooping cough bacilli are by this time buried.

In the specific treatment of acute and chronic bacterial diseases, the principles that bacteriology has established obtain. Practically only the

sera for diphtheria and tetanus and, to a degree, that for streptococcus infection, are concerned. Bactericidal sera are, for definite reasons, excluded. There has been, however, for the past few years, a great activity in the administration of dead bacteria in chronic, especially pyogenic, processes. This, of course, is nothing new, and something that from our knowledge of immunity production was self evident. It had not been used much practically, on account of certain failures, due to the character of the culture used for the inoculation into the patient. We have learned not only for tubercle bacilli, but also for pyogenic bacteria, for typhoid bacilli, etc., that there are adaptations between host and parasite, of which the ones of the host are the more important for the purpose of eliminating the parasite. The bactericidal substances produced by the host have almost an individually greater affinity to their own bacteria, than to those of other individuals. Therefore, if the amount of antibody formation is increased by the introduced dead microbes, the susceptible elements respond readily and overproduce the protective substance, so that not only the effect of the injected bacteria is neutralized, but enough is left to kill the bacteria that keep up the infection. That such bacterial injections were used more during the last year is due to the general acceptance of the truth of a theory that has by its fascinating character done away with criticism and has taken a firm position in the minds of many believers. I mean the opsonin theory of Wright, for the formation of which he was held worthy by some of being named with Koch, Lister and Pasteur. The opsonic theory is based on the assumption that leucocytes combat infection by enclosing them phagocytically, and thus keeping them away from cells susceptible to their action. It is Metschnikoff's old idea but it has been placed in the background by the modern immunity investigations by reason of exact demonstration of other processes that produce immunity. Wright's assertions, based on a method that, to the critical investigator, is full of great sources of error, and not based on any definite knowledge of the nature of phagocytosis that certainly exists, should have been, from the beginning, more thoroughly controlled and refuted. It was the beguiling ease with which an object could be achieved, and had previously resisted other ways to deal with it. The fact that in any blood there are present substances that affect infectious bacteria in a way to enable the leucocytes to take them up by phagocytosis, is not original with Wright; it had been stated long before, and at the same time was submitted to thorough investigation by Neufeld and Rimpler. Under the name of bacteriotropic substances they were added to the manifold constituents of the blood. What their object and nature was could not be discovered. Wright, we must admit, independently took it up, and following a method worked out by Leishmann, modified it so that seemingly it was brought into a condition to be studied and dealt with in a similarly exact procedure as obtains for the immunity substances. His idea was that the leucocytes in infection had the task of destroying bacteria; that in any infectious condition the increase of the phagocytic activity was an attempt at elimination of the bacteria and conditioned by an increased

quantity of those bacteriotropic bodies to which Wright gave the name opsonins. Comparative observations seemed to show that in normal blood the opsonins are present on the average in about the same quantity, while under pathologic conditions the latter varied greatly and was as a rule lower than in health. The relation between these quantities is his opsonic index. To increase the index, to bring it above the normal, appeared to him to increase the chance for eliminating the infection; in fact, he gradually came to consider the work of the opsonins the only factor to be considered in combating infections. Naturally it suggested itself to him that a way to do this would be to use the addition of killed bacteria to those living in the affected individual; he used, therefore, the old method of bacterial inoculation for this purpose. In making injections of these, he soon observed a rise of the opsonic index and likewise an improvement of the pathologic condition. He read out of the curves of the opsonic index a direct agreement between its value and the condition of the patient. The inoculations were regulated in time and amount according to this index. The results obtained by him and by many enthusiastic followers, some with great reputations as authoritative men, were good, exceedingly good in many cases; especially many cases of skin infection that had resisted the efforts of dermatologists for years yielded to this opsonic treatment. A great era of successful scientific treatment of as yet unmanageable troubles, was foreseen, and in England and our country opsonins were the all absorbing subject of admiration and of work, following exactly and with no criticism the ways of the master. Even Simon, of our country, although critically understanding the flaws in Wright's method, and supplanting it with a somewhat more exact procedure, took hold on the importance of opsonins. They are certainly interesting substances. The trouble is, we do not know what they are, how they act and what meaning phagocytosis has. In Germany there was a great silence about the new discovery; a silence caused by the clear understanding that the basis of Wright's theory was nothing but preconceived assumptions. The results of opsonic treatment of chronic infections were surprising only to men not conversant with their nature. The results like those glowingly reported, have nothing to do with the "opsonic" treatment, but are only an effective, active immunization of the patient against his own bacteria. Even the opsonic curves, taken during the treatment, prove this. After injection the opsonic curve shows a fall (negative phase), to rise again above the initial height or higher; after a few days it begins to grow lower until an injection again drives it higher, perhaps above the highest point reached before. If at this time the treatment is stopped, the curve will return to its former height and stay there. If the treatment is continued for weeks and these variations of the line of the curve do not appear so pronounced any more, the infection is killed. Now, let us compare this behavior of the opsonic curve with that of the antibody curve that begins low at the normally present amount of antibodies in the body. It shows a negative phase at the beginning of the infection; but if the system is not overwhelmed with the intoxica-

tion, commences to rise and reaches its acme about on the twentieth day, that is, the time when reconvalescence is beginning. It remains steady for a long time and only very gradually disappears after months and even years. Here, we know with what substances we have to deal; we know exactly the character of the reaction down to its quantitative proportions. Wright deserves credit for having called to our attention, by practical application, the value of using bacterial material for dealing with chronic infectious processes; it is a crime, scientifically proved, to use it in the acute infections if not in the most early stages, that are hard to diagnose. Enthusiasts in Germany have reported cases of pneumonia submitted to opsonin treatment. They were fortunate in not killing their patients by the treatment alone.

Aside from this statement there is something that must not be forgotten in the opsonin treatment and theory. Anything that pretends to bear scientific character must have those qualities that are the innate nature of science. The methods by which new theories are arrived at must conform with those held as obligatory by science. That is not by any means true of Wright's method. It is the most empirical that can be imagined; there is no control for any step. It is, furthermore, so much subject to the influence of the personal equation of the observer that a uniformity of results is absolutely excluded. Tests have been made, and blood material from different normal individuals given to a man, experienced in opsonic work, to determine the opsonic index. Among the specimens were several from the same person taken at the same time. He reported that the specimens, which were marked only with figures, showed not only an immense discrepancy in the different bloods, but also in different specimens taken from one and the same individual at the same time. A normal opsonic index does not exist, and we have no means to determine what the normal condition should be. Therefore, conclusions from such an index in disease are not justified. The opsonins will continue to be investigated, and it may be that important functions of their activity may be discovered. As yet they are things that we know exist, but of which, up to now, we have no thorough understanding. Their alleged effect in chronic processes, bacterial in origin, is due altogether to other reactions than those of opsonins.

A discussion of the work in protozoic diseases, to be what a discussion should be, would necessitate greater space than this review can attempt to cover. It could not be done without entering in many directions of research that have no reference to the pathology and microbiology considered here. It can only be stated that the progress of the study of animal protozoic and other parasitic diseases has advanced immensely, although the principal questions, as, for instance, that of the relation of host to parasite, or the change of generation in different hosts, have not received much attention, and, therefore, or for other reasons, such as the difficulty of obtaining satisfactory material, or a sufficiently long-lasting opportunity to be able to investigate the subject in the locations where those diseases only can be studied with advantage, the scientific progress of what is usually called a tropical medicine has not been very great. The various

diseases that endanger human life by protozoa, have received the most extensive application of workers. Scientists of England, France and Germany have spent years in the areas where these diseases occurred, and the many institutes for tropical diseases, so-called, in these countries and endowed with hospital facilities, have given splendid opportunities to study the various diseases under the most favorable conditions in cases introduced from the motherlands of those diseases. Hamburg and London have been foremost in this direction. As already stated, the progress of pathology and protozoölogy in all this work has been great; the most important was done by Koch on sleeping sickness, caused by a trypanosome (Gambiense). With indefatigable energy he has established the endemological character of this disease and conceived measures by which it can be controlled. The ways of diagnosis and treatment have been immensely improved, so that the outlook for the success against these plagues is very promising. As to malaria, nothing new has developed, except the work of Craig,⁵⁴ referred to in last year's review on the clinical influence of a conjugation of the young ring forms of the tertian and the other types of the parasites on the course of the disease. Later papers of Craig have enlarged the effect of this discovery to valuable data useful in the dealing with chronic malaria. As to the biology of the parasite and the specific biologic differences of the various types of it, Plehn,⁵⁵ ignoring all the well established experimental results, has again, on merely clinical observation, pronounced the unity in specific character of all three types of the parasite.

The endeavor to find reliable therapeutic procedures for the eliminating of protozoic, mainly trypanosomic infections, has given rise to exceedingly fascinating results in the work of Ehrlich⁵⁶ on the relation of certain chemical compounds (stains and arsenic compounds) on the life and biologic changes in the life of trypanosomes. Aside from finding with these investigations, that a resistance, hereditary in character, could be established against certain substances chemically well defined, that this resistance, acting specifically and not influenced by other material similarly toxic but chemically different, the rest of the work is too manifold in character to be referred to in a few words.

The Kala-azer parasite, a near relative of the trypanosomes, has been receiving much attention also, but nothing has developed to throw more light on its biology and parasitism.

As to higher developed parasites, the filariæ, etc., new forms have been discovered, and racial differences established, but on the whole our knowledge has not greatly increased. It is the same with the amœbic intestinal parasites about which only clinical and pathological observations are made. It is a great satisfaction to know that Craig's observations have almost fully confirmed the systemic and biologic difference between the amœba dysenteriæ and the amœba coli so admirably represented by Schaudinn.

The spirochætes come last for the reason that their systematic position is as yet not clear. Although the reviewer is inclined to relate them to the protozoic world, he cannot give any more proof for it than has

been given in many former publications. Certain characters of this group approach very closely to bacteria; others have never been seen in these latter organisms. The protozoic nature is, therefore, not established, and this obtains also for the bacterial interpretation. Further study must show whether they have a developmental character of one of these two classes. That they play a great part pathologically, in our human pathologic conditions is well known; for animal diseases their pathologic activity is just as detrimental. The latter cannot be considered here; of the human parasites, the relapsing fever and the tick fever in Africa and South America, caused by infected ticks, were known for a long time in their etiologic causation due to a spirochæte. The important biologic relations of the parasite and the host have only been established for the spirochæte of the African and American tick fever, not as yet for the Asiatic and European febris recurrens. While the study of these two organisms has at least established their different types, their other biologic behavior has not been interpreted. In none of them do we know as yet whether the transmission to the human organism is simply mechanical or conditioned upon certain developmental changes in the second host.

The spirochæte that above all deserves an extensive and detailed discussion, the spirochæte pallida of syphilis, cannot be dealt with here as it should be, although the reviewer would have been delighted to devote the whole space for his review to this subject. The literature about it is so vast that he has in his reach alone the titles of over 600 publications appearing in the two last years in regard to the etiology of syphilis. What makes it difficult to review this literature is that the results in the overwhelming part of it are absolutely uniform; that the methods, also varying in technic and character, to obtain this uniform result cannot be objected to in any way; and that the conclusions drawn from them are as qualified as any conclusions in the range of our mental capacity can be. We must not forget that this range is limited to the capacity of our mental apparatus, that it is only human, and adapted to the needs of human life; we will never go beyond it. The uniformity of the conclusions as to the etiologic character of the spirochæte of Schaudinn is all that can be said as to the meaning of the immense literature published so far on the subject. As far as our experience goes, there is no doubt about its so-called truth, and the few contradictions made against this conception by men like Sahling, Schultze and Sigel^{56, 57, 58, 59}, fall flat in view of the uniformity that is expressed in this literature on the syphilis spirochæte. As it is uniform in opinion, it need not be detailed. The spirochæte pallida of Schaudinn, *not* of Schaudinn AND Hoffman!) is established today as firm as any so-called scientific facts. As far as our ability can go, it will be soon possible to make pure cultures of the spirochæte, and to prove positively that their effect on the animal organism is the same as that of the material so far used for transmitting the disease from one organism to the other. The specificity of the spirochæte pallida is, at the end of this year, established, and a new addition made to the progress of keeping human life

in a state that further natural developments will be possible. Whether this is nature's way or not, we cannot say, but we at least sincerely hope it is.

Of infectious diseases due to organisms not known, or of demonstrably ultramicroscopic size, yellow fever has not made any progress beyond what was established before. It might be mentioned as a note, that an isolated report has been made of the finding of a spirochæte in the tissues of one case, demonstrated by the Levediti method. It was published in the Bulletin of the Marine Hospital Service. The negri bodies of hydrophobia have continued to be used as an important diagnostic help; their character is as obscure as before. So far the probability is that they are not parasites, but products of cell changes specific for the disease, like the cytorrhcyte forms for variola. The work of Ricketts⁶⁰ on the Rocky Mountain tick fever has established the etiologic agent to be ultramicroscopic; its transmission by a definite form of ticks has been experimentally proved by inoculation of animals (monkeys and guinea pigs), and the author has succeeded in cultivating the virus by continuous serial inoculation of guinea pigs. The virus caused the death of the animals in 7 to 12 days; the clinical and anatomic characters are characteristic and analogous to those of the human disease.

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OPHTHALMOLOGY.

By JOHN GREEN, JR., M. D.

The plan of the present review of ophthalmology will depart somewhat from that of its predecessors in that no attempt will be made to cover even imperfectly the literature of the passed twelve months. The writer's aim has been simply to present a synopsis of the general trend of advance in ophthalmology and to indicate the lines along which advance is likely to come in the near future. Such a review is of necessity a reflex of one's personal views as to what has constituted progress, rather than a catalogue of the facts of the twelve months' progress. In brief, therefore, this review will aim to serve as a guide to such readers as may be interested in the general trend of ophthalmic thought at the present time.

Comparative Ophthalmology. A notable contribution to the subject of comparative ophthalmology has been made by C. A. Wood whose paper, "The Eyes and Eyesight of Birds with Special Reference to the Appearances of the Fundus Oculi," appeared in *Ophthalmology*, April, 1907. These studies were made in the gardens of the London Zoological Society and from sections of birds' eyes and brains. One cannot do more than allude to the intensely interesting character of this research and to commend the excellence of the author's presentation. His conclusions are, in part, as follows: (1) The highest expression of vision, including the most varied and widest range of accommodation, is found in bird life. (2) Owls possess binocular sight. (3) Every bird possesses a "pecten"—an erectile body composed of vascular trunks probably taking the place of retinal vessels and extending from the optic nerve to the lens and possibly having to do with the mechanism of accommodation. (4) The refraction of most wild birds is simple hypermetropia; of domestic species hypermetropia or myopia, with astigmatism. (5) The post-mortem appearances of birds' eyes are decidedly misleading. (6) The range and rapidity of accommodation is far greater in birds than in man. (7) Several visual areas may coexist in a single fundus thus enabling the bird to obtain the vision best suited to its needs. (8) The color sense of birds is very acute. (9) Posterior lenticulo-capsular opacities and the human persistent hyaloid artery are pectinate remains.

A study of the ocular apparatus as it exists in some invertebrates has been made by Leslie Buchanan. The octopus has a lens and iris as in man, but the main difference is that the bacillary layer is pointed inward and not outward. The clam has a lens which is not adjustable, and the iris is replaced by a ring of pigment surrounding the cornea. The spider possesses no special lens but the shape of the cornea is biconvex. In the caterpillar the eye is a dermic structure, about 1-350 inch in diameter. There is a kidney shaped lens but no well developed retina. In the house fly and the bee the cornea is multiple; each of the thousand or more areas is a biconvex or planoconvex lens. Lying behind each of these lenses is a structure comparable to a retinal cone and from this cone

passes backwards, through a diaphragm of pigment, a single fibre, all the fibres meeting ultimately to form a nerve. The snail has only light perception, possessing only a central lens surrounded by pigmented fibres which serve the purpose of retinal elements, while in the Australian mole and leach the eye merely consists of a few pigmented cells which respond in some way to the stimulus of light.

Pathology. That fascinating problem—the pathogenesis of senile cataract—has engaged the attention of a number of workers notably Mlle. Toufesco and Paul Roemer. The latter approaches the question from the standpoint of serum research and his papers deal with the following subjects: (1) The physiologic variations in the osmotic pressure of the intraocular fluids and their relations to the osmotic pressure of the blood serum. (2) The effects of poison on the lens. (3) Experiments concerning sero diagnostic reactions in senile cataract. (4) Researches on the absorption of antibodies by the lens and the permeability of the lens capsule for components of the serum hæmolysins. The idea underlying these investigations is that senile cataract may conceivably be caused by cytotoxins. The paper is extremely technical and does not lend itself to summarization.

A histologic study of the normal healing of wounds after cataract extraction has been contributed by Thomson Henderson. The basis of the study was 32 aphakic eyes in which healing was progressing normally. Among other points Henderson has demonstrated that after a corneo-scleral incision, there is a tendency for the corneal flap to override the peripheral scleral lip, which is due to the fact that the corneal lamellæ are released from their normal tension. In a purely corneal incision, agglutination is brought about by a fibrinous exudate, followed later by a proliferation of the surface epithelium and posterior endothelium. When there is much gaping, corneal epithelium may make its way into the anterior chamber and even block the iris angle. The corneal elements play no part until two weeks after the operation when they begin to compress the fibrinous plug. Permanent cicatrization does not take place for two or more months. In scleral incisions there is an ingrowth of episcleral connective tissue and vessels derived from the conjunctival flap. Later these cells are replaced by scleral tissue cells. The resulting cicatrix is broader and more distinct than in corneal sections, which explains the greater postoperative astigmatism of such incisions. The same author, in a study of the histology of iridectomy found that this operation does not disturb the relation of the severed tissue cells either to each other or to their normal surroundings, the severed iris tissue appearing even after years as if cut post-mortem.

The pathology of rupture of Descemet's membrane, as described microscopically by Becker, in 1875, and again by Haab in 1899, has engaged the attention of many workers in ophthalmic pathology, among whom should especially be mentioned, Alt, Wood and Coats. These splits are found in buphthalmos, myopia, glioma retinae, etc. The ruptures usually run transversely in the periphery of the cornea. If the endothelium gives

way it is entirely regenerated, but however perfect the repair may be the edges of the split are generally visible owing to the heaping up of homogeneous substance at the coiled up ends. In 1906 Erdman produced ruptures of Descemet's membrane in rabbits by electrolyzing the aqueous. The interest of workers in ophthalmic bacteriology may be said to have centered in the spirochæta pallida. The present position of this organism in relation to syphilitic affections of the eye is well set forth in a short paper by Sydney Stephenson. It has been shown that the spirochæta pallida can be found in the non-inflamed eyes of fetuses and of infants suffering from congenital syphilis; that inoculation of the eyes of monkeys and rabbits with syphilitic material may produce lesions of the cornea and iris which are like those seen in man affected with ocular syphilis, and lastly, that spirochætes have been demonstrated in syphilitic iridocyclitis and keratomalacia. Stephenson concludes "that in the discovery of Schaudinn's organism we have the strongest possible proof of the syphilitic nature of any given disease of the eye."

Congenital Anomalies. Some decidedly novel views with reference to the true nature of congenital buphthalmus have been advanced by Abadie. This author denies that the condition is essentially a glaucoma, but ascribes it to a chorioretinitis which may not be detected owing to the cloudiness of the cornea or to the fact that the lesions are situated too far forward to permit of examination with the ophthalmoscope. Persuaded that chorioretinitis plays the fundamental role, Abadie has discarded surgical methods (iridectomy and sclerotomy) and relies wholly on intramuscular injections of mercury.

Instruments and Methods. Reference was made in the review for 1906 to Landolt's paper in which he criticised adversely the design of many ophthalmic instruments as found in the shops. Emphasis was laid especially on the desirability of slight modifications in existing models. All operators will doubtless agree with Beard that the style of fixation forceps in general use is awkward because of the strained position in which the hand is placed. The instrument designed by this author is fashioned after the plan of De Wecker's iris scissors and enables the operator to grasp the globe below the cornea without cramping the hand. The blades of the forceps are set at an oblique angle to the handles, thus permitting the latter to be maintained in the vertical position with the hand of the operator out of the light. A method of tenotomy designed to enable the operator to limit the effect as required is proposed by Todd. He severs a portion of the tendon on one side by an incision at right angles to the muscle and half way through, then makes a similar incision in another place on the opposite side of the muscle situated a short distance longitudinally from the first incision, thus severing the fibres and thereby lengthening the tendon. Ewing has improved upon his forceps for fixation of the lid and control of hemorrhage in the operation of tarsal subsection by the attachment of a flat plate to the posterior arm. The reviewer can bear witness to the great value of this device which should go far toward popularizing the same author's operation for entropion (subsection of the tarsus with the stitching of the posterior flap into the base

of the cut). An instrument designed by Maddox intended for the measurement and enlargement of the fusion power is called the "prism verger." It consists of an adjustable spectacle frame in which two prisms are simultaneously rotated in opposite directions. One of the prisms is reversible in order to effect vertical as well as horizontal separation. It is also adapted for training the muscles by exercise.

A simple method of determining binocular perception of depth has been suggested by Borschka. The patient is asked to approximate the points of two hatpins held at the reading distance up to the distance of 1 mm. A person without binocular perception of depth will not be able to accomplish this task.

A new method of examining entoptically the retinal circulation and fovea has been devised by Fortin. Looking at a mercury vapour lamp through a screen of cobalt gelatine, the retinal capillaries are seen as brilliant convoluted tubes running in all directions. Now and then the lumen of the capillary is seen to be obliterated by small black spherical bodies, either isolated or following one another in succession. These are the red corpuscles. The foveal region is examined by interposing a piece of blue glass. The fovea shows up as a dark horizontal area, surrounded by the bifurcation of the retinal capillaries. The dark area is covered by a number of small brilliant circles close together, giving rise to a mosaic appearance.

Therapeutics. The past year has been marked by greatly renewed interest in the diagnostic and therapeutic application of tuberculin to various diseases of the eye. It is becoming increasingly evident that tuberculosis is the etiological factor in many ocular diseases of the anterior and posterior segments. The application of specific tests has now rendered a diagnosis in many heretofore obscure conditions easy and certain. Very recently v. Pirquet found that in tuberculous subjects vaccination of the skin with tuberculin produces a local reaction marked by redness, swelling and papulation coming on in from twenty-four to forty-eight hours. The papule, which is the diagnostic element of the reaction, is later replaced by a pigment spot. This "cutireaction" appears to be specific in that it occurs only in tuberculous subjects. Almost simultaneously with v. Pirquet's paper appeared the announcement of Calmette that tuberculosis may be diagnosed by placing in the conjunctival sac a single drop of a one per cent aqueous solution of dried tuberculin. In healthy subjects no reaction whatever follows. In tuberculous individuals on the contrary, the so-called ophthalmo reaction occurs. Thus, three to six hours after the tuberculin has been used, the semilunar fold and caruncle become reddened, the eye presenting later the signs of an acute infective conjunctivitis. The reaction disappears in from 18 to 36 hours. The patient's general state remains unaffected. Calmette's results, in so far as they relate to the diagnosis of tuberculosis other than ocular, have been confirmed by a large number of observers. The application of the test in various eye diseases of obscure etiology has now been made in sufficient number to warrant the assertion that this reaction

will prove of inestimable value in the diagnosis of ocular tuberculosis. A comprehensive paper summarizing the results so far obtained is that of Sydney Stephenson. (*Ophthalmoscope*, December, 1907). From the therapeutic point of view Bull's paper on the value of tuberculin, T. R. in ocular tuberculosis indicates what large measure of success may be obtained by the judicious use of this agent in properly selected cases. One point in this connection that is in need of further elucidation is the question of dosage. On this point great diversity of opinion still obtains. Some workers rely upon the large doses of the early period of tuberculin therapy, while others, notably the followers of Sir Almoth Wright, insist (and probably rightly) that the opsonic index furnishes the only reliable guide to the proper dosage. Based on the findings of this method it would appear that the therapeutic dose should begin with 1-2000 mgm. and never exceed 1-500 of a mgm. The present year has witnessed a decided reaction in favor of that old ophthalmic standby—silver nitrate—as against the host of organic silver preparations which of late years have occupied so prominent a place in ophthalmic therapy. Argyrol in particular has come in for much unfavorable comment and is now regarded rather as a valuable adjuvant to silver nitrate than as an agent to be used exclusively in severe infections of the conjunctiva and cornea. Great caution must be observed in using argyrol for purposes of irrigation in suppurative conditions of the lacrimal sac, a number of cases now being on record in which argyrol, escaping into the cellular tissue of the lid, caused a hideous and almost ineradicable stain. The enthusiasm with reference to dionin has suffered no abatement, rather have the indications for its employment been increased. In certain cases, at least, its efficacy is enhanced by using it, not in solution, but as a powder directly to the conjunctiva.

Artificial congestion (Bier's method) to disease of the eye (whether by constricting the neck or by the employment of a suction apparatus fitted to the forehead and cheek) has not yielded results comparable to those obtained in general surgery. Nevertheless, certain cases of chorioiditis and ulcer of the cornea with hypopyon have been decidedly benefited by the application of this method.

The application of boric acid powder as an exclusive method in the treatment of trachoma has been strongly recommended by a number of observers. Bordley briskly massages the cocainized conjunctiva with a cotton-wound applicator dipped in the powder, continuing this treatment until the conjunctiva is smooth. Noyes, however, prefers the application of the powder without massage. Other writers ascribe a special efficacy to massage with a combination of protargol and boric acid powder.

In the treatment of hypopyon, a decidedly novel suggestion comes from Rollet and Moreau. The cornea is transfixes by a Graefe knife passing through the purulent mass, the counter puncture is enlarged by raising the handle of the knife and the instrument is withdrawn without cutting the remaining bridge of cornea. A horse hair 5 cm. in length

is passed from entrance to exit, the ends extending 2 cm. beyond the cornea. By the following day the purulent mass will have completely disappeared.

Operations. A perusal of the more recent literature on cataract extraction indicates the wide acceptance of the combined operation as affording in the hands of the average operator the greatest possible chance of success. There is, generally speaking, a noteworthy unanimity of opinion with respect to the other details of the operation, e. g., the placing of the incision, type of capsulotomy, etc. The great value of the conjunctival flap in the promotion of early repair and the consequent prevention of infection is now universally recognized. The Indian operation—expression of the lens in the capsule—has failed to gain any enthusiastic adherent, although further reports emanating from Major Smith's clinic are not one whit less enthusiastic. American and Continental operators have been deterred from practicing this operation for fear of vitreous losses. This accident is especially frequent when the operation is performed by an inexperienced operator. The proper procedure to be employed in any given case of secondary cataract is well set forth by Callan, whose views in all respect are thoroughly sound. Diaphanous membranes are the only ones suitable for division by the knife needle. Firm bands extending across the pupil are best dealt with by a narrow Graefe knife. Dense membranes with adherent iris should always be managed by the De Wicker scissors. Under no circumstances should an operation which involves tearing, as Bowman's operation with two needles, ever be performed.

It has long been observed that the occurrence of a cystoid scar following iridectomy for glaucoma has had a distinctly favorable influence on the course of the disease. To this end some operators have advocated the deliberate incarceration of the pillars of the coloboma in the wound. Recently Lagrange, by excising a semilune of sclera from the anterior lip of the section, and Herbert by cutting off a scleral wedge, have sought to secure a true filtering scar without the obvious drawbacks of the method to which allusion has just been made. The position of Heine's cyclodialysis (the establishment of a communication between the suprachoroidal space and the anterior chamber without removal of the iris) in the surgery of glaucoma is still far from being definitely fixed. The subject of corneal grafting has received a decided impetus by reason of the success of Zirm in securing excellent and lasting vision in a leukomatous eye by implanting a graft taken from a freshly enucleated eye. The question is also dealt with by O'Meara, who, however, is by no means optimistic as to the future of this operation. In order to diminish the amount of light passing through the sclera in albinos, Komoto proposed and carried out the injection of india ink subconjunctivally and into the tissues of the lid. The gain in comfort and vision was very considerable, but the deformity was so great as to preclude the adoption of the method for general use.

Traumatisms. A class of injuries hitherto slighted in the literature has come in for considerable comment in the past year. It has long

been recognized by ophthalmologists that injuries to infant's eyes may occur during the passage of the head through maternal passages. It has been generally believed that such injuries are rare, and due, in a vast majority of instances, to the improper application of obstetrical forceps. Especially within the last two years have ophthalmic surgeons come to realize that such injuries occur with much greater frequency than was formerly supposed and that in many instances unskilful use of forceps could be positively excluded. Recent statistics indicate that slight injuries to the eyes resulting in opacities of the cornea, subconjunctival hemorrhages, and hyphema are by no means infrequent. The more severe ocular injuries thus produced are: Traumatic exophthalmus, fracture of the orbital wall, leukoma of the cornea, irido-dialysis, paralysis of one or more of the ocular muscles, atrophy of the optic nerve, lacerations of the lids, and ectropion. In a few cases both globes have been completely crushed. The reviewer has gained the impression that obstetricians are not sufficiently alive to the possibilities of ocular injury occurring during difficult instrumental deliveries.

Sympathetic Disease. The terms "Sympathetic Ophthalmitis" ("Transferred Ophthalmitis" of Oliver) and "Sympathetic Irritation" are not applicable to the description of a condition described by Fergus as "Sympathetic Degeneration." This type is non-inflammatory, it does not lead to blindness, and its chief characteristic is a peripheral tolerably concentric contraction of the field of vision and somewhat diminished central visual acuity. Fergus is convinced that severe injury to one eye is usually followed by a certain amount of sympathetic degeneration in the other.

Glaucoma. The problem of the pathogenesis of glaucoma has been attacked by Thomson Henderson whose investigations have led to the conclusion "that the underlying predisposing and causal factor of glaucoma exists in a primary obstruction of the pectinate ligament. This occlusion is brought about by a sclerosis of the fibrous structure composing the filtration area, which results in first, a diminution, and finally, a complete obstruction of the outflow through that channel." The author points out that the connective tissue cells of the pectinate ligament are in the young eye scarcely to be differentiated from the endothelial cells. They gradually undergo fibrosis and it is in this histological difference between the structure of the pectinate ligament in the eye of a child and of an adult that the key to the pathogenesis of primary glaucoma lies. Thus theory seems to offer adequate explanation for the various types of glaucoma. Attention is directed to the fact that the iris is an absorbing surface, accessory to but no less important than the pectinate ligament itself. The efficacy of myotics is due to their contraction of the pupil, thus opening out the crypts on the iris surface, thereby allowing the aqueous to find a way out. Iridectomy opens up a permanent channel for the intraocular fluids to drain away, a channel which will not be influenced by the state of the pupil and which will always be effective if the operation is performed before the iris tissue becomes atrophied and degenerated.

Amblyopia. Apart from hysteria, total temporary blindness in one or both eyes is of very rare occurrence. In such cases the blindness has been of some duration, varying from hours to days. Under the title "Recurring Transitory Blindness" Jacqueau reports four cases of recurrent blindness of very short duration. He believes this condition should be classed as a type of ophthalmic migraine, which it is generally agreed, is of circulatory origin. In the cases reported, the trouble was not peripheral as ophthalmoscopic evidence of circulatory disturbance in the retina was always wanting. The prognosis should be guarded, as cases are on record where the symptoms were followed by death from cerebral tumor or permanent loss of vision from optic neuritis and atrophy.

Refraction and Accommodation. Certain failures in refraction work are difficult to explain and the designation of any source of error hitherto overlooked is important. Such a source of error has been pointed out by Byers in the inaccuracies of test lenses. Recently this author had occasion to examine the lenses of English manufacturers in a test case and found a large number of the spheres 1-2 mm. off center and about a dozen cylinders off axis. A case of American manufacture showed even worse conditions.

The question of accommodation in juvenile aphakic eyes has been investigated by Fuerst whose material consisted of 8 cases in which a varied amount of accommodation existed after absorption or extraction of the lens in young persons. In some cases the entire amount of the high grade hypermetropia of the aphakic eye (12 to 13 D) was compensated for. The mechanism of accommodation is thought to be due to the pressure of the orbicular and the external muscles. The internal muscles take no part in its production.

The important question of accommodation after middle life is well discussed by Jackson who concludes (1) that averages should be forgotten in prescribing lenses for an individual patient; (2) that the variations in accommodation after fifty are as wide between individuals of the same age as between the averages of a different age; (3) that in some persons accommodations persist to extreme old age and must have taken into account in the correction of the presbyopia or the determination of the ametropia present.

Lacrimal Apparatus. The importance of rectifying intranasal abnormalities in obstructive and suppurative disease of the lacrimal apparatus is yearly becoming more widely recognized. An instructive paper by Meyer deals with the mechanical and reflex changes in the nose upon which epiphora depends. The mechanical changes include hypertrophies, formation of crusts, polyps, etc. Special stress is laid upon the deformation of the inferior turbinate which is closely attached to the concave wall of the lower meatus of the nose. This passage easily becomes obstructed by any swelling of the mucous membrane. To avoid the evil effect on respiration of removal of the inferior turbinate, the author recommends the grasping of the lower end of the bone with a

flat blunt forceps, thus breaking it. It is then bent towards the septum where it remains in its new position.

Conjunctiva. The type and severity of conjunctival inflammations are not reliable criteria of their bacteriological causes. This fact is strikingly brought out by McKee, who records three cases of severe purulent conjunctivitis due respectively to the gonococcus, the Koch-Weeks bacillus and the diplobacillus of Morax-Acenfeld. Metastatic affections of the conjunctiva, more especially the metastatic conjunctivitis occurring in gonorrhœa, have been the subjects of several papers. A retrotarsal inflammation of the conjunctiva accompanied by photophobia and asthenopia is ascribed by Elliott to the glare of the subtropical sun of India. The condition is most frequently seen in people not natives of India. Under the title "Acute follicular conjunctivitis with glandular involvement" Beal describes a form of conjunctivitis characterized by the presence of follicles in the palpebral conjunctiva and in the cul-de-sac. The onset of the disease is acute and its course rapid. Recovery is complete without cicatricial traces. The preauricular and at times the submaxillary gland are enlarged.

Sclera. The etiology of scleritis and anterior sclerokeratitis has always been a vexed question. It has long been the fashion to ascribe these diseases to rheumatism and syphilis. A recent paper by Verhoeff indicates that in most cases the disease is a localized tuberculosis. In 13 unselected cases Verhoeff obtained a positive general reaction to tuberculin injections in all and a local reaction in 9. Tuberculin therapeutically applied was invariably efficient in shortening the course of the disease.

Lens. Purtscher has drawn attention to a form of cataract practically ignored in the literature of diseases of the lens. He relates 4 cases—two brothers, their sister, and a man who was no relation. In all the cases the cataracts appeared about the age of 20. They were either cortical or more commonly total; the sclerotic was bluish white and thin; the anterior chamber was very deep; the iris was of a dirty gray brown color and showed none of the usual trabecular structure; an irregular ectropion of the uvea was usually present; the pupils were sometimes contracted, generally unequally, acting badly to light, to accommodation and atropine. Iridodonesis was marked and the vitreous was so fluid as to escape with the aqueous when the anterior chamber was opened. In all cases there was a strong predisposition to glaucoma, cyclitis and detachment of the retina on any operative interference.

That the opacity of incipient cataract does, in instances not altogether rare, regain transparency can no longer be gainsaid. This fact necessarily invalidates to some extent the conclusions of those who ascribe curative properties to various local applications in the treatment of incipient cataracts.

Nevertheless evidence is yearly accumulating that something may be accomplished in a medical way in these cases. Potassium iodide injected subconjunctivally has yielded in the hands of certain observers continuously gratifying results. Very recently subconjunctival injections

of dionin have been proposed by Bernstein in the treatment of incipient lamellæ and nuclear cataract.

Vitreous. Malignant recurrent hemorrhage of the vitreous is a condition so hopeless that any therapeutic suggestion is worthy of consideration. G. S. Derby reports a case in which vision rapidly failed to 3-60 in one eye and perception of light in the other after failure of mercury and iodide. Rapid improvement in the ophthalmoscopic picture and vision followed ligation of the common carotoid artery. Unfortunately, the hemorrhage recurred and sight was lost. In 2 cases cited from the literature the effect of ligation was permanently beneficial.

Retina. Retinal phlebitis is a subject entirely neglected in works on the diseases of the fundus of the eye. Rollet believes that such cases are (incorrectly) diagnostic neuro-retinitis. The ophthalmoscopic picture is as follows: Veiling of the disc border, infiltration of the retina, engorgement and tortuosity of the retinal veins, pallid and shrunken arteries and small retinal hemorrhages.

Optic Nerve. Removal of intracranial tumors has frequently a most happy effect on the associated optic neuritis or choked disk, as shown by the subsidence of papillary swelling and the restoration of vision. Of late years cranial surgery has especially concerned itself with the operation of palliative trephining or cerebral decompression for the relief of intracranial pressure in cases where localization of the growth was impossible. This operation, while prolonging life and relieving suffering, has also been the direct means of terminating the destructive process in the optic nerve head. The most favorable cases from the ophthalmologist's point of view are those in which operation is performed prior to the onset of atrophy. In such cases the nerve head may resume a normal appearance and vision be restored. The whole subject has recently been thoroughly covered by De Schweinitz.

Muscles. Experiments to determine the smallest possible muscular movement of the eye are described by Veress. By looking successively at vertical lines placed 1 mm. from the eye he determined the minimum distance through which the eye could pass with precision from one line to another. This he found to be 3 mm. The smallest contraction of the muscles corresponding to this movement was found to be 0.0355 mm. or 1-1126 of the total length of the muscles concerned.

Orbit. A rare path of infection of an orbital abscess is described by Barck. A small wound of the temple reaching to the bone was followed by swelling of the upper lid and exophthalmus. A probe passed toward the bone gave the impression of a fracture. At operation it was found that the roughness felt by the probe was the edge of a large emissarium. A drain was introduced into the wound and the following day pus appeared. The ocular signs abated but 6 weeks later there was fever, pain and stiffness of the neck with convergent squint from paresis of both externi. Final recovery. An examination of a number of skulls revealed an emissarium not mentioned in the text books between 15 and 25 mm. Above the outer edge of the supraorbital margin, which leads downward into the diploe, and in the outer portion of the

roof of the orbit numerous small foramina. Barck concludes that the path of infection was through the emissarium into the diploe, thence through these foramina into the orbital tissue.

Eye and Nose. There has been no diminution in the interest and attention paid by ophthalmologists to the relationship of sinus and ocular disease. Birch-Hirschfeld in a paper entitled "Eye Symptoms in Disease of the Accessory Sinuses of the Nose," confines himself largely to a consideration of the affections of the optic nerve induced by disease or tumor of the neighboring sinuses. The paper is a very valuable one and the main points are thus summed up: (1) Inflammatory affections and tumors of the posterior accessory sinuses may attack the optic nerve and orbit and give rise at an early stage to more or less severe deterioration of sight. (2) This interference may take the form of a central scotoma, the peripheral field remaining intact. (3) Diagnosis is difficult but one may be assisted by the onset of the above symptoms. (4) In the differential diagnosis between a toxic neuritis and one caused by disease of the sinuses important points would be (a) unilateral occurrence and (b) the passing of a relative into an absolute central scotoma. (5) The anatomical basis of the scotoma is an isolated affection of the papillo-macular bundle behind the point of entrance of the perforating vessels. It consists in edema of the nerve, swelling and proliferation of the glia cells and marked destruction of the nerve fibres. Venous stasis at a certain specific area is the probable occasion of its occurrence, aided perhaps by a toxic influence upon the nerve fibres.

Relations With Medicine. The role of constitutional diseases in the etiology of choroiditis has been emphasized by Bull and De Schweinitz. The former describes a distinct type occurring in malaria; small patches of yellow exudation fairly circular in form only slightly elevated above the surface, occur all over the fundus and show no sign of coalescence. This type is very often accompanied by general uveitis with punctate opacities of the vitreous; the patches of choroidal exudation may be hidden and only become visible when the vitreous clears. In this type central vision may remain good despite the inflammatory process in the fundus provided no vitreous complications are present.

The ocular symptoms in cerebro-spinal meningitis are discussed by Ballantyne on the basis of a study of 73 cases. The symptoms occur in great variety—squint, retraction of the lids, changes in the size and reaction of the pupil, variation in vision, from day to day or even in the course of a single examination. Conjunctival hemorrhages and herpes of the lid are rather frequent at the onset. The uveal tract is not involved. Especially noteworthy is the infrequency of paralytic squint and of optic neuritis and the frequency of spasmodic squint in disassociated movements. The presence of lid retraction, corneal complication, absence of the pupil reflex, nystagmus, lid winking combined with jerky movements of the eye, and optic neuritis are grave signs and warrant a bad prognosis. Coakley has noted as a terminal symptom of hydrophobia, pin point contraction of the pupil, resisting the local and hypodermic use of atropin, and changing to medium dilatation immediately

before death. The cornea and conjunctiva are analgesic in almost all cases and choked disc is of frequent occurrence.

Miscellaneous. Instructors of the blind have long felt that bodily exercise, spontaneous play and physical self reliance were features of training sadly neglected. The experiences of the Overbrook Institution in providing outdoor play grounds indicates that physical culture is perfectly feasible for those totally, as well as for those partially blind. At Overbrook the layout of the grounds is indicated by the physical needs of the pupil. Everywhere there are straight lines and rectangles. Trees are planted in avenues dividing the different play grounds. In front of every row there are narrow walls of brick enclosing the play grounds on all sides, and the children know that there is danger ahead as soon as their feet touch the hard walk. In the gymnasium the wooden floor is framed with a cement walk 7 feet wide. When the feet or roller skate strike it the feel and sound are different. Certain exercises are required from all. At the Kentucky Institute for the Education of the Blind a football team has been in operation for three years. All members of the team are blind, though three of the back field have light perception. The game is modified to some extent; goal kicking is abolished and the opponents cry "pass" when the ball is put into play. The players know who has the ball by the way his feet strike the ground. They do not try to catch the ball but wait until it strikes the ground; then spring for it guided by the faint swish it makes as it passes through the air. Last fall they defeated seeing teams a few times. A magazine in raised letters that can be read with the fingers, entitled "The Ziegler Magazine for the Blind," has recently made its appearance. Every blind person in America who has not already sent his name is requested to do so at once, as the new magazine is to be sent free to every blind man or woman in the United States who wants it.

An intensely interesting article by Stratton on "Railway Disasters at Night" lays emphasis on the psychological need of revising railway signals. He deplors the necessity under the present system of the alternation every night and morning between two wholly different kind of signals, for what is needed is absolute simplicity. The signals should pierce the mind, should thrust their meaning home in the most direct and unerring way. A symbol should bear only a single meaning and the given meaning should be conveyed by an unchanging sign. A system in which an idea is communicated now by one sign and now by another is not entirely flawless. He proposes to do away with color as a means of the signaling and to use throughout the 24 hours the signal which is now employed only by day. He would retain the shape of the semaphore vane and at night this could readily be made luminous. As at night a city's lights are arranged in lines and letters to catch the attention so here the signal could become a fiery arm pointing upward or downward or midway between these directions.

OBSTETRICS AND GYNECOLOGY.

By HUGO EHRENFEST, M. D.

For the past few years these reviews have taken up the literature on pubiotomy—the most widely discussed subject—as the first subject for consideration. Conditions seem practically unchanged. “Operations for the purpose of widening the contracted pelvis” was the one of the two topics placed for discussion before this year’s meeting of the German Gynecological Society. In the customary manner opposing views were presented by Zweifel and Doederlein, the two official “Referenten.” It is needless to say that the former spoke in favor of symphysiotomy, while the latter extolled pubiotomy, or as this operation according to Doederlein more properly must be called, hebosteotomy. A perusal of the proceedings of the Congress, as reported in the *Zentralbl. f. Gyn.* No. 24, leaves little doubt that the majority of German obstetricians prefer hebosteotomy to symphysiotomy, and make extensive use of this new operation. According to statistics collected by Doederlein the subcutaneous operation, i. e., the one almost generally adopted, has been performed on 217 patients with a mortality of 4 per cent. Of those patients, who died of infection, all had fever at the time of operation. In infected cases the mortality of the operation is 12.5 per cent, and Doederlein, therefore, concludes that this operation is contraindicated in infected cases, in which perforation must be given preference. In the subsequent discussion many speakers recorded the results of very extensive personal experience and practically all concurred in the fact that hebosteotomy is a very useful operation, or as Bumm said: The introduction of hebosteotomy in the therapy of contracted pelvis must be regarded a most noteworthy simplification of our methods. It may be mentioned in this connection that Sellheim, to whom we owe many most ingenious devices for the practical teaching of obstetrics, presented at this Congress a paper on the feasibility of practicing pubiotomy on sheep in a slaughter house.

As already mentioned, the subcutaneous method of Doederlein is the one almost generally accepted. Therefore, comparatively little of importance has been contributed concerning the technique or indications of this operation, or the after-treatment of the patients. In reference to this last point it may be emphasized that according to Doederlein complicated bandages of adhesive straps or plaster of Paris are unnecessary. As a rule the manyheaded flannel binder is employed, but Van de Velde even suggests to leave every bandage off, since this practice favors the formation of a thick callus, which may result in a permanent enlargement of the pelvis. This latter issue again is frequently discussed in the literature of the past year. Truzzi (*Zentralbl. f. Gyn.*) enumerates the different methods devised for this purpose and refers to the one invented by him which of late again has been described by Wendeler. It consists in the temporary insertion of a foreign body (decalcified bone,

ivory, metal, etc.) between the cut ends of the pubic bone until a broad callus has formed. This permanent enlargement of the pelvis is the one chief argument in the friendly war between symphysiotomists and pubiotomists. Baisch tried to settle the question by apparently proving from statistics, that the assumption of such a permanent enlargement is erroneous for the one operation as well as for the other, as long as the healing process is perfect. But it is always a difficult task to settle such problems simply by means of statistics. By interpreting the very same figures used by Baisch in a different way, Zweifel attempts to prove that Baisch is all wrong, and Thies, who was able to re-examine 43 patients, on whom symphysiotomy has been performed, thinks that there cannot be the slightest doubt concerning the fact that symphysiotomy at times causes the permanent enlargement of the pelvis, just as it has been claimed for pubiotomy by Van de Velde and others.

Decidedly interesting is an experiment of Gauss with a symphysiotomy performed during pregnancy. He reasoned as follows: The greatest danger of both symphysiotomy and hebstectomy lies in the possibility that an extensive laceration of the soft tissues during the passage of the fetus may lead to a direct communication of the genital canal with the wound of the operation. Since the callus, as is proved, for some time keeps a pronounced elasticity, it seemed advisable to perform the symphysiotomy a few weeks before full term, so that the wound at the time of labor would be healed. He successfully carried out this plan in one instance.

Two cases of formation of a hernia subsequent to pubiotomy are now on record, but the real danger of the operation lies in the injuries of the bladder. Many of these have been described, but it seems that in all, or almost all cases, these injuries have healed spontaneously. It is obvious that the improvement of the technique of the individual operator is the best and almost secure safeguard against this very undesirable complication of the operation. This is almost convincingly shown in a paper by Kannegiesser in which he compares the results of a second series of 30 pubiotomies of Leopold's clinic in Dresden with those of the first series comprising 21 cases. There was not one maternal death in the total number of operations, but in the second series even all the 30 children had been saved.

Outside of Germany we can observe an equally friendly and almost enthusiastic attitude towards this operation on the part of Italian, French and Russian obstetricians. Even conservative England falls into line. Gibson (in the *Jour. o. Ob. Brit. Emp.*) who has seen 12 pubiotomies in Dresden and himself has performed three, writes: The enthusiasm with which the operation now is taken up, and the fact that the maternal mortality is only about 3 per cent and the excellence of the after results, seem to prove that pubiotomy is one of the greatest discoveries of modern obstetrics.

E. Hastings Tweedy, the Master of the Rotunda Hospital (Dublin) encountered a very serious hemorrhage in his first pubiotomy, performed on a not very suitable case, but was able to conclude the report

of this experience with the statement that since writing it he has performed two other successful operations "without encountering any of the accidents or complications met with in the first case."

In marked contrast to the extensive use of this operation in Europe, American obstetricians remain rather indifferent. Fry (*Surg. Gyn. & Obst.*) was able to collect records of 20 pubiotomies made by 11 different American operators, among them Williams with seven cases. Fry performed the operation four times. Of these 20 patients 4 died, i. e., maternal mortality of 20 per cent, a fact which certainly seems discouraging. But very correctly Fry emphasizes that in these cases death was not directly attributable to the operation, but to a prolonged labor, and to infection caused by the fruitless efforts to deliver by means of the high forceps. In the 12 operations, in which no attempt of artificial delivery had preceded pubiotomy, there was no death. This very fact, in my opinion, explains the difference in the attitude of American and foreign obstetricians. Fry thinks that pubiotomy in America will obtain only a limited field of usefulness on account of the unsatisfactory convalescence. "While satisfactory as operation, difficulties are encountered in the after-treatment which are little, if any, less than those which brought symphysiotomy in disrepute." This conclusion seems to me not acceptable, because these same conditions would have prevented the present general acceptance of pubiotomy by so many foreign obstetricians who had refused symphysiotomy. As pointed out by Fry, entirely satisfactory results are obtained only with primary operations, that is, in cases in which hebosteotomy is the first and only operative interference during labor. These cases, for obvious reasons, are rare in the hands of the American obstetrician. Contracted pelves are comparatively most common among the poor immigrants, who, as a rule, at first fall into the hands of midwives and rarely will have escaped fruitless attempts with the forceps before they are seen by the specialist. But in Europe it is just this class of patients which fills the wards of the immense maternities and furnishes the expert obstetrician in charge of the hospital with ample material on which to develop the technique and indications of such ingenious operations as hebosteotomy.

There is possibly still another reason for this apparent indifference of the American obstetrician towards this operation, namely his remarkable admiration of Cesarean section—peculiarly enough largely based upon the excellent results obtained with this operation by European operators. The suggestion to use Cesarean section in the therapy even of placenta previa originated from an expert American surgeon, who told the writer of these lines that this idea suddenly entered his mind when he looked at the dirty hands of the obstetrician who was about ready to perform a version on that anemic patient. A leading German obstetrician has pronounced this method of dealing with placenta previa a blunder which soon will be forgotten even in America. He has erred. In a recent article Laphorn Smith says: "Cesarean section would save all the mothers and almost all the children who now die from eclampsia, placenta previa

and contracted pelvis. If done early it is a much safer operation than *accouchement forcé*, symphysiotomy or pubiotomy."

Reynolds, during the past year in several interesting articles, makes the claim that the women ill-equipped to stand the strain of pregnancy and labor do well under the primary Cesarean section and "for them in case of doubt the section should be chosen; these women in especial should never be subjected to the combination of labor and a peritoneal operation." And Reynolds classes among these ill-equipped e. g. also the "neurasthenic women, with little nervous endurance or capacity of bearing pain, with poor muscles, heart muscle, and lung capacity, and with ill-trained and usually deficient eliminative system, etc."

There cannot be any doubt that the relative indications for Cesarean section are gradually becoming wider, and rightly so, because the dangers of the operation are diminishing proportionately with the improvement of the obstetric knowledge of the general practitioner who handles the majority of these cases before they reach the specialist. One must not be surprised to find in recent literature cases in which Cesarean section was performed on account of extensive varicosities of the labia (Brunet), or of a vesico-vaginal fistula, or as in a case of Piispanen, because in five preceding pregnancies the fetus had died with the beginning of labor.

It seems, however, doubtful whether at present such a sudden expanse of the indications is justifiable as to include among the cases suitable for this operation prolapse of the cord (as quoted from literature by De Lee) or a certain class of neurasthenics as suggested by Reynolds. Mortality figures alone are entirely insufficient as a basis for alluring theoretical deductions. It seems unfair to pronounce and count every woman as well and cured who has not died as the result of a Cesarean section. Scars in both the abdominal and uterine wall are not entirely negligible quantities. Post-operative hernias still do occur, and a woman with a laparotomy scar, almost as a rule, shows some impairment of her general health or, at least, working capacity. Rupture of the uterine wall during a subsequent pregnancy is an occurrence of more than extreme rarity and should not be left out of the discussion of this problem. About a dozen well authenticated cases of this unfortunate sequela of Cesarean section so far has been recorded in literature.

"Cesarean section in the interest of the fetus" is a common phrase in modern obstetric writings. During the last few years much has been written in favor of the life of the child, which, as is claimed, has been valued too little by the conservative old time obstetrician. Of course, asepsis, improvement of old and the discovery of new obstetric operations have justified a more active therapy in abnormal labor with a gradual betterment of fetal mortality. This "interest in the fetal life," however, today is too extensively used as a mere pretext for a deplorable obstetric polypragmasia.

Rosenfeld has shown that too many obstetric operations are performed and he is supported in his claim by Hegar who demonstrates that at present the mortality resulting from the increased number of ob-

stetric operations does almost counterbalance the gain made by the introduction of asepsis into obstetric practice. And that the effect of the present surgical era of obstetrics has not done so far, and does not promise in the near future to do very much for the fetus without unduly increasing the danger to the mother, is clearly demonstrated in a very instructive paper by Hofmeier (*Zeitschr. f. Geb.* vol. 59).

A new suggestion has been made of late which furnishes the obstetrician with still another indication for operative interference. The fact seems positively established that in certain instances pregnancy is prolonged. The result is an abnormally large fetus which may cause difficulties during its expulsion and in this way distinct danger to both the mother and the fetus itself. From France (Bouchecourt), Italy (Bossi), England (McKerron), America (De Lee, Allen), etc., simultaneously comes the advice to interrupt pregnancy by artificial means at its normal end. Theoretically no objection can be raised against such a suggestion, in practice one will encounter the one difficulty, that we do not possess a single reliable method of ascertaining the fact that a pregnancy has reached its normal end. Whether methods, which will have to be resorted to in an effort to bring on labor pains, will not increase maternal mortality, or at least morbidity to such an extent as to wipe out the expected benefit, is a question which will have to be decided at a later date.

There is another point which in my belief is not properly taken into consideration by those who argue in favor of a more liberal use of forceps or Cæsarian section for the purpose of shortening the sufferings of labor and thus reducing their harmful effect on the mother. I am referring to recent, more or less successful attempts to relieve labor pain. It seems that medullary anesthesia for this purpose is losing in favor, indeed seems practically to have been given up. In the center of interest stands a combination of morphin with scopolamin, introduced as a general anesthetic for surgical operations by Schneiderlein in 1900. About three years later Steinbuechel first made systematic investigations concerning its value in obstetric practice. Since that time many encouraging reports have appeared, among them probably as the most important the paper of Gauss, in which he details the results obtained in 1000 labor cases in the maternity of the University of Freiburg. He considers the half-narcosis (*Daemmerschlaf*) resulting from the use of a certain dose of morphin-scopolamin "a narcosis absolutely free of danger for either mother or child." From other sources reports have appeared which sound less favorable, indeed, in a few cases (surgical and none of them obstetrical) patients have died after this form of anesthesia. These unfortunate occurrences largely, if not entirely, have been caused by the use of too large doses of these drugs. With the use of small doses in obstetric practice, simply to relieve labor pain, this anesthesia seems free of danger to the mother. The great variations in the results of the different investigators, with total failures in many instances, today is satisfactorily explained by two facts: (1) The various preparations placed on the market as scopolamin (which undoubtedly is identical with hyoscin), vary greatly in their value, i. e. in their physiologic action. The most reliable preparations of this alkaloid are made by Merck and

by Boehringer, according to an article in the Jour. Am. Med. Assoc. (Dec. 21, 1907, p. 2103), a careful perusal of which is strongly recommended to anybody interested in scopolamin. (2) Scopolamin in solution deteriorates rapidly. Newell has found that the solution does hardly keep longer than four days.

Gauss proceeds as follows: Preliminary hypodermic injection of 0.00045 to 0.0006 gram of scopolamin hydrobromate (Merck) with 0.01 gram morphia muriate. The full reaction of this injection should be noticeable within three quarters of an hour. If it fails to appear, another injection of 0.00015 to 0.0003 gram of scopolamin without morphia is given. The effect of this injection, as a rule, becomes evident within 15 to 30 minutes. After two to four hours another dose may become necessary in which the second injection is repeated. If the patient seems to be arousing about 0.005 gram of morphia may be added. This medication can be continued, according to the positive assurance of the author, even for several days. By a careful dosage he attempts to keep the parturient woman in a semi-conscious condition in which she indicates the acute pain of a uterine contraction by slight moaning, but is still able to give rational answers to questions, dozes off between pains, and after completion of labor finally wakes up without any recollection of the occurrences. Newell prepares at least every fourth day a solution containing 1-10 grain of Merck's scopolamin hydrobromate and $2\frac{1}{2}$ grains of morphia sulphate. "As soon as labor became active, practically when contractions occurred at five-minute intervals, an initial dose, containing 1-150 grain of scopolamin and 1-6 grain of morphin was given hypodermically. This was repeated at the end of from one to two hours, unless the patient showed marked reaction to the initial dose. In no case was the dose repeated after the cervix became two-thirds dilated." As already stated the results of Gauss, Newell and many others were very satisfactory, but it must be mentioned that e. g. Hocheisen or Steffen consider this anesthesia as not entirely free of possible harm to both mother and child. The best method of the most appropriate application of this latest form of obstetric anesthesia has as yet not been definitely evolved, but the fact seems established that morphin-scopolamin in many cases can be employed effectively and without noteworthy risk, if a pure and reliable preparation is used, and if too large doses are carefully avoided.

Interesting are recent attempts to introduce into up-to-date obstetric practice the old, and among savage people still popular custom of leaving the bed a few hours after childbirth. Several years ago experiments have been made with such a procedure by Kuestner. At the last congress of the German Gynecological Society Gauss reported results obtained during the past one year and a half in the clinic of Professor Kroenig. "Anemia, weakness, heart failure, varicosities, existing or threatening infections were considered strict indications, to urge the patients to leave the bed as early as possible; healthy puerperæ were permitted to decide for themselves when to get up." Of the 1000 women delivered during these 18 months, 60 per cent left the bed before the fifth and 40 per cent before the third day. No ill effects were observed. In fact, those who

got up early felt better than the others. Spontaneous urination and defecation were facilitated. The author lays stress upon the fact that this early rising apparently hastened the appearance of milk. Involution of abdominal walls and genital organs occurred in a most satisfactory manner. The "early risers" showed a smaller percentage of fever cases and of retroflexion. Kroenig in an article in the *Deutsche Med. Wochenschrift* states that he permits patients to leave the bed, whenever possible, eight hours after a labor managed under scopolamin-morphin. He emphasizes that he obtained similarly satisfactory results with early rising after laparotomy, a procedure which lately also has been recommended in this country by Ries, Boldt, etc. The question of leaving early the childbed during the past year furthermore has been discussed by Bouche-court. "In some country districts it is a matter of emulation among the women to remain in bed as little time as possible before undertaking all the household work, and yet there seem few bad results. Among the richer classes, on the contrary, it is the habit to remain in bed a month, and it is difficult to get the patient to leave her bed." This writer reviews critically the various disadvantages and advantages of early rising and concludes that the advantages seem to prevail.

It is always difficult to break with old, time honored customs and views, but this suggestion of early rising (not exactly after eight hours) seems worthy of a careful consideration. There cannot be any doubt that the very long bedrest, which is not uncommon in the practice of some obstetricians among the wealthier class of patients, may prove harmful in various respects. The very general opinion that a puerpera *must* stay in bed at least a week is untenable as a strict rule.

During the last year interesting and valuable descriptions of very young ova have been published by Jung, Rauscher, Freund, Cova, Stolper and Leopold, the latter's monograph has just appeared in an English translation. Cova's paper contains the most complete review of the entire literature. All these authors confirm the implantation theory of Peters which at present seems to have been generally adopted by the writers of modern textbooks of obstetrics. Very interesting is Stolper's description of peculiar bloodspaces interpolated between the vessels of the decidua and the capillaries immediately surrounding the ovular chamber. By means of these blood reservoirs the minute ovum is protected against the direct and full force of the blood pressure in the maternal vessels. In a later stage of development these blood spaces permit an easier enlargement of that cavity which harbors the ovum. Freund's specimen is one of extreme rarity. It is an ovum approximately three weeks old, which shows a hydatiform degeneration of the entire chorion, including the chorion leve, a point of special interest.

In this connection mention may be made of a few articles dealing with the peculiar question, whether a well developed ovum can be completely resorbed in the uterine cavity, and a pregnancy thus simply disappear. In a case, reported by Polano, a bilateral oophorectomy was made during the fourth month of pregnancy. The uterus, both on palpation and during the operation on inspection, showed all the characteristics of an organ pregnant four months. After the operation the uterus gradually

grew smaller until it finally returned to a normal size and consistency, without any uterine hemorrhage or other symptoms having indicated that the ovum has left the uterus. Fraenkel calls attention to the fact that this spontaneous disappearance of an impregnated and well developed ovum from the uterine cavity frequently has been observed in animals after bilateral oophorectomy. He records another case similar to that of Polano.

There is one more obstetric problem of considerable interest which must be mentioned in this review. In the literature several cases of cadaveric rigidity of the fetus have been recorded. Ballantyne has collected isolated reports of 29 cases and has cited Tissot as showing experimentally that intrauterine *rigor mortis* actually occurs. Trimmer records a borderland case, in which the child having died as the result of a prolapsed cord stiffened half an hour after birth. Van Oordt, of Rotterdam, and Caruso mention 49 cases and to this number Jones (Jour. o. Ob. of Brit. Emp. vol. X.) adds four more of his personal observation. In his opinion there cannot be any doubt that every fullterm child, which dies in the uterus, stiffens. But unless the period of its rigidity happens to coincide with or overlaps the period of delivery, the rigidity cannot be observed. A still-born child may have died, stiffened and relaxed before delivery, or it may be born before it had time to stiffen, or it may be delivered in a state of rigor. In a case of Van Oordt considerable difficulty was encountered during a forceps extraction, this being due to the stiffness of the child. An interesting case is described by Mueller. A pregnant woman fell and hit her abdomen. Three days later, somewhat prematurely, labor began. The second born of the twins was in a state of complete rigidity. Jones very rightly expresses his surprise that this subject is passed over in silence by so many writers on obstetrics and on forensic medicine.

Turning next to the gynecologic literature of the past year one cannot help being impressed by the comparative scarcity of really new thoughts in the immense amount of gynecologic papers, which both in number and size so greatly outrank the articles on purely obstetric subjects.

In a short synopsis, as attempted in these pages, first place must be given to a paper of Van de Velde, an extensive abstract of which has appeared in the December (1907) number of this JOURNAL. This writer has demonstrated the extreme importance of blastomycetes (saccharomycetes) in the etiology of such gynecologic diseases as vulvitis, vaginitis, endometritis, pyosalpinx, cystitis, etc. He has found blastomycetes as the cause of peritonitis and puerperal sepsis, and has succeeded in positively revealing the source of this infection.

A paper of great scientific and also practical importance is that of Hitschmann and Adler (Zeitsch. f. Geb. vol. 60) which tends to overthrow the prevalent views concerning the histology of endometritis. These writers attempt to prove that the accepted ideas as to the normal histologic condition of the endometrium are erroneous and thus have led to a false conception of the changes resulting from inflammatory processes. In their opinion "endometritis glandularis hypertrophica and hyperplastica" have nothing to do with inflammation. The so-called hypertrophic

endometritis simply represents the typical premenstrual condition of the endometrium, while the hyperplastic variety comprises, on the one hand, normal premenstrual conditions, on the other, variations in the glandular tissue which still are entirely within physiologic limits. The only one true form of inflammation which they accept is the "endometritis interstitialis" in which the stroma shows those signs which in pathology are generally accepted as those of an inflammatory process. To very similar conclusions comes Theilhaber. He also asserts that we have no right to diagnose an inflammatory condition simply from the number, form and ramification of the endometrial glands. Schwab in examining the endometrium of 40 uteri was able to ascertain that alterations in the endometrial structure, corresponding with those of the several forms of so-called endometritis, could be found in clinically healthy as well as in diseased condition of the uterine mucosa. He, therefore, was forced to conclude that the diagnosis endometritis must be based on clinical symptoms and not on histologic findings. Very recently the views of Hitschmann and Adler have been fully confirmed by Hartje.

How thoroughly these interesting investigations are likely to change present views can be estimated from the fact, that at the last meeting of the A. M. A. in the obstetric section a committee, appointed to decide on a proper nomenclature of endometritis, reported, that a classification of endometritis should be purely anatomical, that a classification based on clinical symptoms, as catarrhal, purulent or hemorrhagic, is bad. "We may speak of acute and chronic endometritis. The chronic form may further be divided into glandular and interstitial, when the glands on the one hand, or the stroma, on the other, are especially involved. Pathologists may subdivide the chronic forms in order to indicate anatomical peculiarities, but this is not necessary for the clinician."

Several contributions of Riebold deal with the etiologic significance of menstruation in the causation or temporary aggravation of certain, especially infectious diseases. Older claims of Sabourin and Kraus, that fever during menstruation is indicative of a tuberculous process, had been confirmed by Franck. This writer stated that whenever inflammatory processes in the genital organs or accidental complicating diseases can be excluded, anemic patients must be considered strongly suspicious of tuberculosis if they show a regular rise of temperature during menstruation. Riebold found that this elevation of temperature is an almost typical occurrence in tuberculous patients, is, however, frequently observed also in the presence of other diseases, in which the increased metabolism of the premenstrual stage leads to an acute temporary aggravation of the pathologic process. He claims that this premenstrual fever is never seen in perfectly healthy women. This same author describes a periodic pyrexia with rheumatic symptoms in young girls, as the so-called "recurrent rheumatic ovulation fever." These patients during menstruation have more or less pronounced painful swellings of the joints, have symptoms of myocarditis, occasionally of peri- or endocarditis, frequently of pleurisy, and finally, in some cases, develop a parotitis. Riebold refers the pathogenesis to the process of ovulation. A few observations of this peculiar condition have also been recorded in

this country by Jones Dudley Morgan. Jaffé gives the reports of four post-mortem findings in cases of a general peritonitis occurring at the time of menstruation. He thinks that at this time the bactericidal power of the vaginal secretions fail and thus allows the infection to spread from below. Interesting in this connection is the observation of Scherer of a hemoptoe which up to the death of the patient during ten months regularly preceded menstruation.

The carcinoma question has remained practically unchanged. The first place among the operations, at present in vogue, is still held by that devised by Wertheim, the second probably by that of Mackenrodt. The present status of the permanent curative effect of these two operations is clearly reflected in the reports given by the originators of these operations at this year's meeting of the German Gynecologic Society.

Wertheim now has 120 cases operated upon more than five years. Recurrence took place in 53 of the 87 patients who had been kept under observation, but 61 per cent of all cases operated upon had remained free from recurrence for 5 years. The absolute proportion of cures, on Winter's basis (to total number of carcinoma patients seen) was 25.6 per cent. There were 60 more cases free from recurrence for 4 years. The improvement in the results of the extended abdominal method is due to increased skill in operating and to avoiding accidental injuries. The primary mortality in the last 140 cases has fallen to 8.7 per cent.

Mackenrodt can look back on operations for six years and a half, with an operability of 92 per cent, and a primary mortality varying between 19 and 21 per cent. Operation in 144 cases has been survived from 18 months to six years, cures might be claimed in 51 per cent of all cases.

These percentages of permanent cures sound encouraging but still are far from satisfactory. To a large extent the improvement of the results certainly is due to the fact that now these patients much earlier than formerly are operated upon. The propaganda for a better knowledge and appreciation of the first symptoms of uterine cancer is rapidly spreading. An interesting article by Milligan (*Jour. o. Ob. Brit. Emp.*) conveys a clear idea of the immense scope of this systematic crusade against carcinoma of the uterus in the different countries of the civilized world.

We may conclude this brief review with a short reference to those two new therapeutic methods which at present stand in the forefront of medical literature—the vaccine treatment after Wright and Bier's hyperemia.

Reports on the opsonin treatment in gynecologic practice, especially in cases of tuberculosis, are still scanty and hardly permit any deductions as to what has been achieved. Bier's hyperemia treatment has been introduced into gynecologic practice in various forms. Appliances have been constructed to administer the suction treatment to the uterus in cases of endometritis and metritis, and the inventors of these apparatus invariably have reported very good results, which, however, in most instances still remain unconfirmed by other investigators. Really satisfactory results have so far been obtained with suction only in cases of mastitis.

DERMATOLOGY AND SYPHILIS.

By J. J. HOUWINK, M. D.

The annual review of 1906 was devoted entirely to the subject of syphilis. Through the discovery of the *spirochæta pallida* by Schaudinn and Hoffman, in 1905, syphilis came so to the front in research work all over the world that an epitome of the investigations carried out was of the greatest importance and therefore the writer was justified in devoting his entire space to that subject.

Since then no subject in medicine has been taken up by investigators so universally as lues, and no journal on dermatology and syphilology or general medicine, has appeared that does not bring reports of new work done in this line. I think it proper therefore to continue the article by Dr. Engman with a review of the work done in syphilis research during 1907. As there is such an abundance of material, the most important work only will be mentioned in this paper.

Etiology of Syphilis. Following the work of Metschnikoff on inoculations of the syphilis virus in monkeys, came a contribution by Finger in the "Wiener Medicinische Presse" on "Neuere ätiologische und experimentelle Syphilis-Forschung." He stated in this paper that, according to his experiments with the inoculation of monkeys, he had found the African monkeys much more susceptible than the Asiatic ones. He urges therefore that an expedition be sent to Africa instead of to the Netherlands East Indies. He found that infection in the lower monkeys took effect only after deep scarifications and when a large amount of the virus was inoculated. And even then only a primary lesion appeared, without secondary exanthemata and constitutional disturbances. In his experiments with the higher monkeys the primary lesion always developed after the most superficial inoculation, and in every case this primary lesion was followed, in from 3 to 10 weeks, by secondary lesions and constitutional symptoms as known in the human. Through Finger's experiments it was first shown that tertian lesions and sperma of syphilitics are contagious, which gives us an entirely different view of the subject from that held before. It was Finger himself who inoculated, years ago, before the *spirochæta pallida* was discovered, a score of students with material from tertiary lesions and as none of them ever showed any symptoms of syphilis, his conclusion was that tertiary syphilis was not contagious.

At the Congress der "Deutschen Dermatologischen Gesellschaft," Neisser also stated that his experiments demonstrated that tertiary lues was contagious; he obtained the same positive results with the inoculation of sperma from syphilitics. He found that inoculation of meningeal fluid and of blood in some cases gave a positive reaction, and that syphilis in the latent stage is contagious is shown by his inoculations from lymphatic glands in this stage.

With Bruck, Neisser made experiments with extracts of human and animal organs, and of the brain of a paralytic. In 77 per cent of their cases they got a positive reaction, showing that progress in the line of serodiagnosis in syphilis may be looked upon as favorable. When using extracts of organs of healthy individuals, they always obtained negative results. Furthermore they found that if they had to do with a doubtful ulcer, and got a positive reaction, this was always followed by the appearance of secondary symptoms. While inoculating monkeys from monkeys, Metschnikoff found that the virus grows weaker when passed through the lower specimens; but it again becomes more virulent when inoculated from the lower monkeys into the chimpanzee.

Hoffman showed in his pathological work that the spirochætæ when entering the body, first work themselves into the lymphspaces of the papillæ. From that point they go deeper into the connective tissue spaces and around the capillaries, where they multiply. He found them also very early in the nerves. In condylomata lata and in mucous patches the spirochætæ move towards the surface, making these lesions exceedingly infectious, as is well known clinically. As practical results from our knowledge of the cause of lues, Hoffman urges that every doubtful case be diagnosed as syphilis when the spirochæta can be found in the primary lesion. In lues latens, examination of enlarged glands may confirm the diagnosis, while in nephritis luetica the spirochætæ may be found on the urine sediment.

According to Neisser's investigations the spirochætæ are not found in ulcerating gummata. As soon as ulceration and degeneration had set in his results from inoculation were always negative, while they were most often positive before this stage.

In hereditary syphilis, Neisser always secured positive results from inoculations with heartblood, material from kidneys, liver and ovaries—organs from which, in acquired syphilis, no results by inoculation could be obtained. This shows that in congenital lues we have a more general distribution of the virus in all the organs and tissues, probably through the circulation. Even with mucous secretion from the nose of a baby suffering from hereditary syphilis a positive result was obtained.

Schucht found that syphilitic virus inoculated in a rabbit's eye, by making scarifications in the cornea and rubbing the virus in, or by injection of the virus into the anterior chamber, a typical condylomatous iritis was produced with an incubation stage of 11 to 23 days, and a parenchymatous keratitis with an incubation stage of 19 to 43 days. In sections of these eyes, spirochætæ were found in abundance, while inoculation from these lesions on monkeys proved to be positive only in a few cases. It seemed that the virus became less virulent in the rabbit's eye. Hoffman and Bruning made similar experiments and their conclusions confirmed the work of Schucht. They were also able to produce the same conditions in dogs.

To make the review complete we should mention that Siegel and his few followers are not yet convinced of the connection between the spirochæta pallida and syphilis. He still adheres to his opinion that

the spirochæta is only an artificial product of the staining methods used, and that the cytorrhyses lues found by him, is the actual cause of syphilis. And as Koch's postulates are not yet susceptible of proof, it having been, thus far, impossible to obtain and grow the spirochæta in pure culture, we may expect that he and a few more will continue their struggle. This, however, cannot influence our belief that the spirochæta pallida is the actual cause of lues. We base our conviction on the constant presence of this parasite in luetic lesions; on its presence only in syphilis; on its definite relationship to the pathological changes found; on its morphological characteristics; and on its presence in the lesions of experimental lues in the lower animals.

The treatment of syphilis has not undergone many changes so far. Still a new agent has been used successfully in some cases as a curative and a preventive remedy and deserves to be mentioned, namely, atoxyl. Metschnikoff was the first to use atoxyl as a preventive measure in syphilis and found, in his experiments on monkeys, that the injection of 30 mg. of this drug, per kilogram of bodyweight, prevented the appearance of the primary lesion after inoculation of the virus, when injected within 15 days after inoculation. He tried this again and again at the Institut Pasteur, and always with the same good result. Applying the atoxyl preventive treatment to the human, an average injection of 2 grams should be made, which dose, however, is too high to be used safely. Hallepeau therefore tried an injection of 750 milligrams of atoxyl, followed in two days by one of 600 and again two days later by one of 500 milligrams, without observing any symptoms of intoxication.

The preventive treatment of Metschnikoff by rubbing in a 25 to 30 per cent calomel ointment, 1 to 2 hours after the inoculation, as mentioned before, always prevented infection in monkeys. In man, however, this treatment is of no value, unless it is used as a routine after each coitus. Further experiments in man have to show the value of the atoxyl preventive treatment and if it proves to be of benefit the prophylaxis of syphilis will be an easy matter if patients come early enough for treatment, which, however, is in our opinion very seldom the case.

That atoxyl is also of benefit in the later stages of syphilis is shown by Lassar, who obtained good results in primary, secondary and tertiary lues, when treated only with atoxyl. Further experience, however, is necessary before atoxyl can be recommended, next to mercury and potassium iodide, as a routine.

The old question of how to treat the primary lesion has entirely changed since the later works on lues. Jacobsohn, Neisser, Joseph, Finger and Holländer, all strongly advocate the excision of the primary lesion, or destruction of it by Holländer's hot air treatment. In a personal interview Joseph told the reviewer that he believed he had saved at least ten per cent of his patients from developing syphilis, by an early destruction of the chancre. Finger reports a case in which the spirochæta was found, the lesion excised and no secondary symptoms appeared in a year.

As a new treatment for ulcerative and subcutaneous gummata, Karlinski recommends the use of collargol in the following ways: The lesion is cleansed and in the gumma are deposited 2 to 3 tablets of collargol ad 0.050. The lesion is then covered with collargol plaster. The same treatment is repeated once a week and as a rule a cure is accomplished in three weeks, leaving a smooth scar. Cases treated with potassium iodide and mercury plaster at the same time took at least seven weeks to heal. As a new drug for internal treatment of syphilis ought to be mentioned mergal, which is very highly recommended by Ehrmann, who says that mergal, or hydrarg., cholicum oxydat., in his experience has given as good results as injections or inunctions ever did. It does not produce any affection of the mucous membranes of the intestinal tract, it is easily absorbed and pleasant to take.

Pityriasis Rosea, by American dermatologists classified as an inflammatory disease of the skin, of which the etiology is unknown, is considered by some as a toxic erythema, by others as a mycosis, identical with herpes tonsurans maculosus, by Unna as a variety of seborrheic eczema, etc. In our opinion it is due to a vegetable parasite, as all the clinical symptoms indicate such origin. We were not surprised therefore when we noticed in Finger's "Lehrbuch der Hautkrankheiten," which appeared in 1907, that the author classifies this disease under the vegetable parasites and mentions that Oppenheim, of Vienna, has found small, irregular and oval-shaped spores in the scales of several cases. Oppenheim himself read a paper on this subject in the Deutsche Dermatologische Gesellschaft and showed several slides with these spores. So far, however, he has been unable to make a pure culture.

Favus, in its clinical aspects, always the same in the human and always described as due to the *Achorion Schoenleinii*, may have different parasites as its cause. Bodin describes in the "Annales de Dermatologie et Syphilographie," a parasite which he found in typical cases of favus, and which is entirely different from the *Achorion Schoenleinii* in its microscopical aspects and in cultures. Still the clinical lesions cannot be differentiated from the ordinary forms and even microscopically he found the same pathologic changes in the skin. He calls this parasite *achorion gypseum*, and states that it must be very rare as he found it only twice in 200 cases of favus. In animals this parasite has not been found.

More interest is shown lately in the study of tropical diseases of the skin and as a result of this interest we find in the last year's literature descriptions of several tropical dermatoses, etc., of great importance. We will mention only a few:

Venereal Granuloma, a disease met with on the tropical islands of the Melanese, is contracted per coitum. Its first symptom is a small nodule under the epidermis, which soon breaks down, leaving a red, easily bleeding granulating surface. This lesion spreads gradually and may finally involve the whole surface of the body. In extreme cases it is accompanied by general cachexia and leads finally to death. So far only one white man has been infected. Mercury does not affect the course of

the disease. The only cure has been accomplished by extirpation of the diseased area. Kuhn, who describes 7 cases, calls it a new venereal disease.

Gangosa, known for 150 years by the Spaniards in the Ladrone and Caroline Islands, is characterized by a destructive ulceration, usually beginning on the soft palate, pillars or uvula, extending to the hard palate and nasal cavity, larynx and face. The active ulceration is followed by chronic ulceration, cicatrization and mutilation. Constitutional symptoms are slight or absent. It is mostly found in full blood natives, less in mulattos. On the Island of Guam there are now 250 patients suffering from this dreadful disease. The cause is unknown. Probably we have to deal with a specific infection, communicated by flies.

In addition to these diseases the finding of spirochætæ in frambœsia ought to be mentioned. Frambœsia shows the characteristics of a constitutional disease like syphilis and the finding of a spirochæta could therefore be looked for.

Treatment. It would be impossible to mention all the new drugs that are brought before the profession in a year's time, many of them to be forgotten as soon as they are tried. Last year, however, has brought us several new therapeutic agencies of real value. The general opinion of dermatologists is that now we have a valuable aid in the treatment of certain skin diseases by the introduction of the vaccine treatment of Wright. It is especially valuable in the treatment of acne indurata, acne pustulosa, sycosis non parasitica and in furunculosis. From our own experience we would say that the so-called stock vaccines are as beneficial as the vaccines procured from the lesions of the patient, which makes this treatment of value for daily practice, as it would be practically impossible to make a vaccine for each patient.

The use of carbon dioxid snow, as first described by Pusey, is based on the same principle as the treatment with liquid air. The intense cold, -90° C., produced on the skin by application of the snow causes the destruction of the lesion so treated, and a violent inflammation when applied sufficiently long. After these disturbances have disappeared, the treated part heals over with a smooth, soft, new skin, or hardly noticeable scar without any contraction. The treatment is of value in warts, calluses, senile keratoses, pigmented and vascular nevi, lupus erythematosus and in small superficial epitheliomata. A drum filled with liquid carbon dioxide from which the snow can be procured easily by opening the valve, can be had for a small price in every town and makes this treatment therefore available for every physician.

While the liquid air and carbon dioxid snow treatments were discovered in America, Holländer, of Berlin, came with his hot air treatment for certain dermatoses. Compressed air is guided from a drum through a Paquelin and heated to $+ 300^{\circ}$ C. It is used as a destructive agent in lupus vulgaris, chancroid, chancre, gummata, angioma and torpid ulcers of the leg. The results in Holländer's clinic were very good. As the treatment is very painful, the hot air should be applied under chloroform narcosis. Bier's hyperæmia has been tried in certain skin

diseases, and while it is not a cure-all, it is of benefit in the treatment of acute purulent infections of the skin, like acne, furuncles, abscesses, etc., and also in *ulcera gummosa cruris*. The enthusiasm for the x ray has gradually calmed down to its normal proportions. Some years ago the x ray was considered curative of every skin disease known and the most favorable reports could be found in every medical journal. Nowadays the x ray is used in only a few diseases exclusively and in several others more as an adjuvant to other methods. However, it would be a great loss to dermatologists if we had to treat our patients without the help of the x ray. The diseases in which its use is of the most value are *lupus vulgaris*, *acne vulgaris* and *rosacea*, superficial epithelioma, psoriasis, indurated patches of *lichen planus*, eczema, favus, trichophytosis, and in the removal of superfluous hairs.

While it would require too much space to speak here of the indications for the use of the x ray in the diseases mentioned, we cannot finish this article without the statement that the x ray is of no value whatever in the treatment of epithelioma of the lip and of mucous membranes. In these cases the knife is indicated, and using the x ray is losing valuable time.

SURGERY.

By MALVERN B. CLOPTON, M. D.

In this review the most important articles of the year on some subjects will be noted in abstract, but no attempt will be made to comment.

In abdominal surgery the review is largely a retrospect, a tabulation of the results of large experiences. Gastric ulcer surgery has come to a high grade of technical efficiency and the physiology of the newly arranged alimentary canal, the nutritional changes and the limitations of this surgical field have been studied.

Musser (Am. J. of Med. Science, Dec. 1907) considers the medical versus the surgical treatment of gastric ulcer. This is a most elaborate statistical study, both of published cases, and from records of men in large hospital or private practices. The article is written by a medical man and his conclusion is that gastric ulcer is a medical disease, but he has compiled an interesting series of tables from the 1871 cases of gastric ulcer. To establish a cure he thinks we should have a lapse of at least two years without symptoms, with an approach to normal chemical conditions, and a removal of abnormal physical or mechanical states. To these requirements some authorities would add the absence of occult blood from the stools for long periods. The advantage of medical treatment is obvious, the danger of it lies in the sense of false security in a dormant ulcer, and the fact that the healing may be attended with grave sequels of adhesion, contractions and stenosis. The advantages of surgical treatment are evident enough in perforation, in repeated and chronic hemorrhages (but rarely in acute hemorrhages). If the symptoms and physical signs of retention from obstruction, hour glass contraction, or adhesion, suspervene and persist the case is surgical. The dangers of surgical treatment are the same as with medical treatment unless excision of the ulcer is resorted to, and to these add operative mortality and the 2 to 10 per cent death rate from complications or defects of metabolism, and the disadvantage of the psychic insult of the operation to debilitated subjects. If simple ulcer is productive of perversion of the secretory function alone it remains a medical affection. Inasmuch as hyperchlorhydria is in part a neurosis, the secretory function can be balanced chiefly by medical, dietetic and hygienic measures. Even if pyloric spasm attends the hypersecretion and hyperacidity, it does not necessarily take the case beyond medical care. It is wrong to submit such cases to surgery, unless motor disturbance becomes permanent. The serious duty is the selection of the surgeon, who must have much experience and good technical ability. After the surgical procedure is carried out, medical treatment must be continued for at least four months, hygienic and dietetic treatment carried over a period of years. The improvement in the surgical technique is noted and it is admitted that the statistics of Robson and Mayo in their end results compare favorably with, but are not better than similar statistics of men treating similar groups medically.

Gastric and Duodenal Ulcers.—Mayo (Annals of Surg., June, 1907).—Nearly all the failures of ulcer surgery are to be found in the so-called clinical or medical or non-indurating ulcers, because (a) the ulcer is not located and many times its existence is problematical; (b) the condition is often confused with pyloric spasm, atonic dilatation, gastroptosis and gastric neuroses, or other morbid non-surgical conditions; (c) the ulcer does not give rise to mechanical interference with the progress of food, which would introduce an operative indication.

The location of the indurated ulcer is usually stated as ten gastric to one duodenal, while the author in two hundred cases has found eighty-seven gastric, ninety-eight duodenal and fifteen independent in either viscus. This discrepancy is explained by the fact that the pylorus is usually incorrectly located (the pyloric vein runs upward on the gastric side of the pylorus for three-fourths of its extent) and since gastric ulcers rarely involve the last three-quarters inch of the pyloric end of the stomach, and duodenal ulcers are most frequently found very close to the pylorus, the mistake is made of calling what seems to be a pyloric ulcer a gastric ulcer. In sixty-nine cases of resected cancers of the stomach, 54 per cent gave a clinical history or a pathologic picture of having developed on the base of an ulcer.

Chronic nonindurating mucous ulcer is discussed at length with its indefinite symptomatology, which might be equally characteristic of other nonsurgical conditions. Pyloric spasm is the most misleading symptom, and it does not indicate ulcer alone, as it may accompany gall stones, appendicitis or tuberculosis of the cecum. Operations based on the belief or actual existence of nonindurating mucous ulcers have as a class been unsatisfactory, not because of a high mortality, but because in a large majority there has been no relief, or a new element of discomfort has been introduced. Operation on a mucous or undemonstrated ulcer, is not indicated unless there exist complications, such as perforation, hemorrhage or obstruction.

Operations for Non-Malignant Diseases of the Stomach.—Moynihan (Surg. Gyn. and Obstet. June, 1907).—The first class of cases discussed is the perforating ulcers. Of these there were twenty-seven, ten duodenal and seventeen gastric, with eighteen recoveries. One must not wait for quickened pulse rate and rigid abdomen before operation. The first symptom is sudden agonizing pain which almost reaches the limit of human endurance, and as a rule there is neither shock nor collapse. Exquisite tenderness of the skin is nearly always found. A diagnosis can be made from the history of ulcer, sudden intolerable pain, restriction of thoracic movements, surface tenderness, abdominal rigidity or restriction of the normally free abdominal movements. Early operation is indicated in all cases; the ulcer should be closed and infolded; excision is not necessary. Gastro-enterostomy is advised when the ulcer is near the pylorus and might cause obstruction, or where a second ulcer is present. Drainage is necessary only in the late cases and if used should be suprapubic and in the Fowler position.

The second group is the hemorrhagic cases, which are divided into acute ulcer and chronic ulcer cases. He has operated on thirty-three cases with the loss of six. Acute ulcers, when they bleed, are characterized by an abruptness of onset, rapid loss of a large amount of blood, and marked tendency to spontaneous cessation, and an infrequency of any but a trivial repetition. They never require operation. Chronic ulcer hemorrhages may be divided into four classes: 1. Hemorrhage, latent or concealed, trivial and inconspicuous. 2. Intermittent, moderate quantity, occurring spontaneously or capriciously, no jeopardy of patient's life from loss of blood, but persistent anemia. 3. Hemorrhage usually following a warning exacerbation of chronic symptoms, is rapidly repeated and abundant. Its persistence and excess are perilous and if unchecked will cause death. 4. Hemorrhage instant, overwhelming, lethal. The third group is the only class demanding operation. Gastroenterostomy alone is a satisfactory operation, but more recently the ulcer has been infolded by two rows of tight sutures about the base which include all the vessels inside.

The third group treats of chronic gastric and duodenal ulcers, and Moynihan's opinion is very emphatically in favor of posterior gastroenterostomy for all cases of simple ulcer, whether single or multiple, involving the pyloric region of the stomach or duodenum, although if active he thinks that the ulcer should be infolded or excised, and if extensive multiple ulcers involve a large part of the pyloric region, he believes in Rodman's excision of the ulcer bearing area. In the diagnosis he believes we can be fairly accurate in locating the ulcer, particularly so if it is duodenal; he believes a diagnosis of the ulcer can be made and its location determined from the history without examining the patient. Repeated stasis of the food for longer than twelve hours means organic disease. He places a high value but no certain reliance on gastric analysis. He does the posterior no-loop operation and he believes the only point to be settled in the technique is the direction of the gastric incision. He recommended formerly that this opening should be from above downward and to the right; later Mayo recommended from above downward to the left, but his experience with this direction has been very unfortunate. He now believes that the direction should be in the direction the duodenum takes as first observed when the colon is raised. This may vary through wide limits. There were two hundred and six cases of gastric or duodenal ulcer operated upon, with two deaths; gastric ulcer alone in one hundred and thirty-eight cases, duodenal ulcer alone in forty cases, and both combined in twenty-eight cases. Gastric ulcer occurred twice as often in women as in men and duodenal ulcer three times as frequent in men. In all these cases after operation there were four cases which were no better. Two of these are "neurotic." In this series he observed fourteen cases of gastric tetany of varying degrees, all with a high degree of pyloric stenosis, dilatation of the stomach with hypertrophy of the wall and obvious peristalsis and a prolonged stasis of food. Gastroenterostomy relieved them; two of them had slight attacks and one a severe attack immediately after operation. The fourth group

is of hour-glass stomach. It is not infrequently associated with cicatricial pyloric stenosis. The cardiac pouch is usually larger than the pyloric and gastroenterostomy of the cardiac pouch will relieve the condition. There were twenty-four cases operated upon, with four deaths. Gastroplasty was performed seven times, gastrojejunostomy and gastrogastrostomy three times.

Benign Lesions of the Stomach.—Monroe (Annals of Surg., June, 1907).—There were one hundred and fifty cases followed from the operation to the present time, eighty-seven showing gross ulcer, sixteen medical or nonindurating ulcers, twenty-five cases of adhesions to the viscus and fifteen so-called neuroses, while nine were variously classified as ptosis, pyloric spasms, etc. Congenital pyloric obstruction and perforating chronic ulcer must evidently demand surgical intervention. There may be a question in other conditions. The reason for partial success in gross ulcer may be ascribed to the fact that undue prominence may be given by the patient, who for years has been watching her digestive apparatus, to eructation of gas or occasional vomiting, or there may be a weakened neurotic strain, or some intercurrent disease. Later sudden bleeding in two cases that had been cured for a year after gastroenterostomy, gave strong reasons for excising extensive ulcers, also to prevent malignant degeneration. In the sixteen medical ulcers, even if there was ptosis or an evidence of the stomach not draining itself, the relief was never more than incomplete and in this class of cases the abdomen is now closed without operating on the stomach. A diagnosis between medical nonindurating and gross indurating ulcers cannot be made without opening the abdomen. Adhesions to the stomach from the gall bladder or other regions, when broken up, give relief in the majority of cases. The worst class of cases to deal with is the neurotic, and these for the most part were made worse by operation, the practice is not to interfere with these cases. The operations used were the long and then the short loop of Moynihan, which was abandoned for the gastroenterostomy and enteroenterostomy, both with fair success. Roux's operation in Y was next with almost complete success, but the technique was too complicated. It was tried on some of the worst neurotics to prevent regurgitation of bile; nevertheless almost constant regurgitation followed. Now the no-loop posterior gastroenterostomy with the transverse slit in the stomach is the one employed. Finney's operation was used, and although slow to come the end results were good. After reopening a number of abdomens with varying intervals after anastomosis they failed to find any indication of closure of the opening when made with suture, but in two cases where Murphy's button had been used the gastroenterostomy had closed so that it had to be remade with clamp and suture.

Pylorectomy for Benign Stenosis.—Biechot (Revue de Chir., Jan., Feb., March, 1907).—In an extensive article pylorectomy is recommended as the correct surgical procedure for benign stenosis of the pylorus such as usually is caused by an ulcer. Gastroenterostomy is considered illogical on physiologic grounds, because the duodenum is shown to be essential

to the proper performance of digestion. It controls the movements of the stomach and its emptying through the pylorus; the passage of the chyme through the duodenum is necessary to the proper functioning of the biliary and pancreatic apparatus. In ulcer there is always danger of cancer developing later, or a perforation or a hemorrhage, which are not prevented by gastroenterostomy. The complications following gastroenterostomy such as vicious circle or volvulus of the intestine or the development of peptic ulcer, are great drawbacks to the operation. On the other hand pylorectomy overcomes all these objections, removes the offending ulcer, leaves a physiologic canal and gives an immediate and ultimate cure. He quotes statistics to show that the mortality of gastroenterostomy is about 5 per cent, and that in pylorectomy the percentage is about the same. But even though the immediate mortality from pylorectomy is greater, the fact that the cure is complete makes the balance fall in its favor, as opposed to a less mortality from gastroenterostomy with its subsequent greater risk. Quite a number of cases are appended which show the results of such operations.

The Operation of Gastro-Jejunostomy and its Effects.—(Lancet, Sept. 21, 1907).—Paterson summarizes a very interesting paper as follows: (1) A certain amount of bile and pancreatic juice enters the stomach after gastro-jejunostomy, but the amount is small and has no injurious effect. (2) The acidity of the gastric contents is markedly diminished, usually about 30 or 35 per cent. This is due, partly to a diminution of the total chlorids secreted, partly to the partial or complete neutralization of the free hydrochloric acid by the alkaline bile and pancreatic juice, and probably also to earlier stimulation of the pancreatic secretion, and compensatory earlier fall of the gastric secretion. In gastric ulcer cases the removal of spasmodic stenosis of the pylorus likewise tends to diminish the total acidity. (3) Gastric digestion is impaired but not lost after gastroenterostomy. (4) The motility of the stomach, if normal before operation, is for practical purposes, unaffected. Gastro-jejunostomy is therefore not a drainage operation. Its beneficial effects on gastric ulcer are due to the diminution of the acidity of the gastric contents. (5) Gastro-jejunostomy has no material effect on the metabolism of the human body, the percentage of nitrogen and fat absorbed being within the limits observed in individuals who are apparently healthy. This chemico-pathologic evidence is supported by the evidence of clinical experience.

Operation for Perforation of Ulcer of the Stomach.—Körte (Arch. f. Klin. Chir., Bd. 81, Th. 1).—In this article the author gives a second series of perforating ulcer cases numbering 19, with 13 recoveries. (In the first series published in 1900, of the 10 operated cases only one recovered, but all the cases came to operation with at least a 24 hour interval after perforation). In this series of the 6 cases operated upon before 10 hours after perforation all recovered, of those operated between 10 and 19 hours, 5 of the 7 recovered, and of those operated after the 20th hour only one of the 6 recovered. The chief factor is the time after perforation that the operation is done. In the literature since 1902 there

are 95 cases of perforation of gastric ulcers reported with 51 recoveries. Of Körte's 19 cases, 12 gave a history of previous pain from the ulcer, but 4 had been entirely free from stomach symptoms. Four of the cases had been previously gastroenterostomised, one 5 years previous, another 3 years before had an anterior gastroenterostomy, a third had a similar operation only 9 months before, a fourth had a posterior gastroenterostomy which contracted after 3 years, and a second fistula was made in the anterior wall, and 9 months later the stomach perforated. Two of these perforations were at the junction of the stomach and gut; one was a new ulcer. The fact that in six years with 19 cases, four perforations occurred after operations which are thought to be curative, shows that we cannot hope that gastroenterostomy will cure all. The cause for perforation was hard to determine except in two instances, when the pain followed immediately after lifting heavy loads. Pain is the first symptom, and is constant. (Morphine should never be given as it masks the picture). The most valuable objective sign is tension of the abdominal wall. Tenderness is usually most marked in the epigastrium. The pulse in the first hour is not a good index; not, in fact, until peritonitis is developed. Liver dullness and free gas in the belly only come later in the disease, and should not be waited for, as the only hope of recovery lies in the earliest operation. Leucocytosis is not regarded as determining, as the observation can in these cases only be made once. The differential diagnosis between perforated appendix, gall bladder or pancreas can often only be determined by operation. Operation in all the cases was under general anaesthesia, a long incision through the right rectus exposing the field. The ulcer was either excised or closed without incision. In one instance where the ulcer was so closed to the pylorus that stenosis seemed likely after closure, an immediate gastroenterostomy was made. The perforating ulcer was in half the cases at the pylorus or close by; in 5 cases in the middle of the lesser curvature; the others were near the cardia, two at the point of the earlier gastroenterostomies, one in the jejunum below the gastroenterostomy and one in the duodenum.

Perforation of Gastric Ulcer.—Martens (Deutsch. Med. Wochen. Vol. XXXIII. No. 45).—Operated 10 cases with 6 recoveries. All cases were sent to the hospital with a diagnosis of appendicitis and peritonitis. He closes the perforation by double sutures and brings up the omentum which he fastens and then packs to the ulcer with gauze after flushing the cavity with saline, and drains with tube wrapped in gauze.

Subacute Perforation of Stomach and Duodenum.—Moynihan (Annals of Surgery, Feb., 1907) has operated upon 15 cases; some of these were cases of empty stomach at the time of perforation (acute perforation nearly always comes with a full viscus). One case had a perfect plugging with a tag of omentum. The opening may be covered with plastic lymph which closes it, or the ulcer may become adherent at its base to the anterior abdominal wall, the liver or the pancreas. In every particular save one, that is intensity, the symptoms are the same as in acute perforation. Operation should be done early, the ulcer infolded if the adhesions are

easily separated, but some old fibrous conditions are best met by gastroenterostomy.

Connor (Am. J. of Med. Science, March, 1907), considers *Acute Dilatation of the Stomach* and reports a case. He collects 102 cases from the literature and after a study of the histories concludes that the condition rests on no single pathologic basis; he believes that the most important single cause is the incarceration of the lower end of the duodenum between the root of the mesentery as it passes in front of it, and the vertebral column behind. It most frequently follows operation under general anesthesia, but quite frequently the dilation can be ascribed to errors in diet. Smaller numbers of cases occur in the course or during the convalescence from wasting disease, or develop after injuries, and an interesting group is that associated with deformity of the spine. Vomiting and distention are the most important symptoms, pain and constipation being frequently noted. Next to vomiting, collapse is the most prominent symptom. About three-fourths of the cases recover. The stomach tube should be used early and often, and food and drink by mouth stopped, rectal feeding being substituted. As he believes that one-half of the cases are due to duodenal constriction by the mesentery, he thinks the belly position should be maintained. In these cases the mesenteric artery running in it is stretched tightly across the duodenum by the weight of the small intestine hanging over the brim of the pelvis.

W. Braun and H. Seidel (Mitt. a. d. Grenz. der. Med. u. Chir., Bd. XXII. 5) considers the subject of *Acute Gastric Dilatation* both from an experimental and a clinical field, and conclude that acute motor insufficiency is the basis of the affection, which may be a separate disease, or an accompaniment of chronic debilitating trouble, and that it is truly functional and not of a mechanical nature. With the acceptance of the theory of disturbed innervation of the stomach and weakened musculature, all the surgical forms of acute dilation can be explained, particularly those after anesthetics, laparotomies, traumas, spinal lesions, etc. A direct weakening of the muscular action may be caused by mechanical, inflammatory or toxic lesions. Accompanying this change is a hypersecretion. Chronic dilation can have a mechanical role in the causation of acute dilation. They believe, however, that the arteriomesenteric root crossing the duodenum and compressing, has little to do with the dilation of the stomach, but is an inconsequential finding in those cases where the functional dilation is primary.

Herte (Mitt. a. d. Grenz. Med. u. Chir. Gedenkband f. Mikulicz) recounts a case which had for twenty months been suffering from ulcer and chronic dilation of the stomach, in which vomiting of large quantities was a most prominent feature. Just previous to the operation a mass could be felt near the pylorus. A laparotomy under ether showed a stomach dilated to two-thirds the size of the abdomen, and a carcinoma of the pylorus, which was removed, the anastomosis being made with the duodenum after the first Billroth method with a Murphy button. For three days the patient did not vomit, but on the fourth day and up to the ninth day the vomiting continued, as much as a liter of brown, bitter

fluid coming up at a time. On the ninth day vomiting stopped and abdomen began to distend from a dilation of the stomach, which soon reached between the symphysis and navel. Under cocaine a posterior gastrojejunostomy with a short loop was done. Vomiting lasted for two days after this operation, then ceased and recovery followed. In this case the hypersecretion was so marked that the stomach muscle could not push it through a patent opening left by the operation, and in three days' time, despite the fact that two-thirds of the stomach had been resected, the organ was dilated to a size as large as it was before operation.

Bloodgood (Annals of Surgery, Nov., 1907)* reports on *Acute Dilatation of the Stomach* in six cases. To his mind the "chief etiologic factor seems to be some toxic agent in a patient weakened by previous disease and suffering from some chronic gastric lesion. In some cases the toxic factor may be sufficiently great to produce paralysis with hypersecretion in a stomach previously dilated." He believes that there is a group of cases in which no evidence of a pathological condition is found to explain the obstruction other than the normal anatomical factors at the mesenteric junction of the duodenum and jejunum. He suggests for those cases of chronic gastroduodenal dilation, of which he reports a case (this is probably the common pathologic condition of many gastric neuroses which have not been relieved by posterior gastroenterostomy), that many may be relieved by a duodenojejunostomy, which will meet the condition and drain the distended duodenum. In two cases after relief of the mesenteric tension and pressure on the duodenum the obstruction was not overcome, so he emphasizes the importance of hypersecretion. Two of the cases followed pyloroplasty (Finney) which suggests, that in chronic dilation of the stomach with hypersecretion it is better not to select a Finney operation, or a Billroth gastroduodenal end-to-end after pylorectomy, but to do a gastrojejunostomy with a short loop.

The faithful use of the stomach tube with change of position of patient to knee chest, or left lateral with elevation of the pelvis, should give relief in the majority of cases, but when dilation persists and the fluids fail to pass and the patient becomes weaker from loss of fluid, operation should be performed.

The Mesocolic Route: Cholecystojejunostomy, Transmesocolic Gastroenterostomy. Lotheissen (Zentralbl. f. Chir., 1907), says that the posterior retrocolic gastroenterostomy is considered by most surgeons as the normal method. The only objection to it is the occasional occurrence of a vicious circle. Lotheissen has yet to see a failure with it either in v. Hacker's clinic or in his own. Brentano has recently shown that the anastomosis between the gall bladder and the jejunum should be done through the mesocolon. Lotheissen recommended this operation in 1903. The suture is easily carried out after the opening in the gall bladder has been made. The intestine is tied off with a strip of gauze, as in a gastroenterostomy, and the gall bladder, after the abdomen is packed off with gauze, is carefully punctured and completely emptied. This permits one to palpate the head of the pancreas and to exclude stones in the common duct. When the operation is completed the gall

bladder lies in the opening of the mesocolon and the visceral situation is normal. The peristaltic movement is unchanged. In doing a gastro-enterostomy, Lotheissen also works through an opening in the mesocolon, in this way doing a posterior gastro-enterostomy. Only once was it necessary to anastomose the jejunum to the anterior wall of the stomach. It is often impossible to bring the transverse colon upward to expose freely the posterior stomach wall. After the operation is completed through the mesocolon, this is closed with a few sutures.

The Technic of Closing the Blind Duodenal Stump After Resection of the Pylorus.—(Billroth II.) Krogins (*Zentralblatt für Chirurgie*, No. 39, 1907).—Various methods have been devised to dispose of the blind end of the duodenum, after resection of the pylorus, or of the pylorus and the first part of the duodenum, for carcinoma (Billroth's method II.). Brunner tries to extraperitonealize the stump, Steinthal covers it with omentum and gauze drains. The chief difficulty is due to the fact that the posterior surface of the second part of the duodenum is not covered with peritoneum, and that this surface is soft, friable and not tolerant of suture. Krogins overcomes the difficulty by mobilizing the bowel, even, when necessary, separating it from the pancreas. The duodenum is then cut across and either tied off or closed by suture. The oblong posterior area that is not clothed with peritoneum is now covered by a row of transverse Lembert sutures, and as the blind duodenal end is reached the stump is invaginated and the suture continued. Although the lumen of the bowel is thus slightly narrowed a good peritoneal covering is obtained and the safety of the stump assured.

The Operative Indication in Gastric Carcinoma.—In an elaborate article based on hundreds of cases, most of them original, Nyrop (*Archiv. für klin. Chir.* LXXXII. H. 4) proves again the now generally accepted dictum that symptoms of cancer of the stomach are simply those of pyloric obstruction, and that obstruction from any cause may be characterized by identical symptoms, with hydrochloric acid deficient and lactic acid present. Moreover, nonobstructive cancers are often symptomless. Nyrop holds that operation is imperative when the remains of food are habitually found in the stomach twelve hours after eating, or when there is a palpable tumor. In all cases of chronic and persistent delayed indigestion not cured by internal treatment the operation should at least be considered. The diagnosis between ulcer and cancer is complicated by the frequency with which a cancer develops on an ulcerative base. The age incidence of cancer and ulcer corresponds closely (thirty to fifty-five years). Emaciation is an expression of lost motility or obstruction, and is dependent upon the position and extent of the lesion and not its nature. Even the long standard test of hydrochloric acid is not more to be depended upon, since this acid is absent in a number of gastrointestinal affections and is habitually absent in 40 per cent of persons over fifty. Lactic acid is simply a sign of retention fermentation. Hematemesis may occur in cancer, ulcer or hepatic disease, or even with no demonstrable lesion. Coffee-ground vomit and palpable tumor have a certain diagnostic value, but they occur too late to be of practical service.

The only possible early diagnosis is that of obstruction. The nature of the obstruction must be determined by an operation. Nyrop distinguishes between functional and organic obstruction, holding that symptomatically the two infections can be differentiated by a certain intermittence of symptoms in the former cases. Nor are apparently functional or spasmodic cases so benign as to be relegated to conservative treatment. They may complicate ulcer or cancer, or may in themselves induce a sphincteric hypertrophy leading to organic obstruction, dilation, and atony of the stomach; or by interference with the blood supply, from pressure on the vessels, causing ulceration. Tetany may develop as a complication of a functional pyloric narrowing. In view of these dangers Nyrop does not hesitate to advise exploratory operation in every case of pyloric obstruction, whether it be due to pylorospasm or to valvular obstruction with or without associated gastroptosis, since the symptoms are completely relieved by gastroenterostomy. The relatively favorable results of operation on pyloric cancer as compared with those of intervention for the relief of malignant infiltration of other parts of the stomach are attributed entirely by Nyrop to the fact that in the former case obstructive symptoms lead earlier to operation. Nor could he cite a more striking instance of the symptomless course of non-obstructing gastric carcinoma than that of Mikulicz, who accidentally discovered his own cancer while palpating his abdomen, but not until it had attained a growth that made it inoperable. Nyrop concludes the paper by urging a test for gastric retention in all stomach disturbances. The test he prefers is that of Bourget. The patient is given a meal of bread, meat, and eight to ten cooked plums at 8 p. m., and at 8 the next morning the stomach is carefully washed out. Unless there be gastric retention no food remains will be found in the washing.

For the determination of the effect of posture on retention the plum and meat breakfast is given at eight in the morning, the patient walking about after his meal as usual. At eight in the evening the stomach is washed out, and if the remains of plums are found the diagnosis of obstruction is assured. Nyrop's conclusions are in general except by those who have made the most careful medical and surgical study of gastric carcinoma. It remains to be proven, however, that his dictum to the effect that every one who has chronic stomach trouble should be given plums, and that if these plums or parts of them can be recovered by the tube in twelve hours, operation should be performed, is subject to so few exceptions as to make it a safe and wise working rule.

Future Results in Cancer of the Stomach.—Hoffmann (Mitt. a. d. Grenzgeb. Med. u. Chir. Gedenkband f. Mikulicz).—Are we to expect better results in the future from the surgical treatment of the stomach cancer, and is there a definite relation between the clinical duration of the disease and its operability? To decide these points the 655 cases in Mikulicz clinic were studied. Many more men than women were observed (416 to 239), but the resected cases were about equally divided (87 men to 77 women). This is explained by the fact that enteroptosis and relaxed abdominal walls are most often observed in women, making

tumor evident to examination when still small, and these are the most favorable cases for operation. Out of 163 cases of resection of the pylorus 21 were free from recurrence after two years. In many cases it was possible definitely to establish the beginning of the trouble, in others not so easy until the operative findings were consulted. But in considering the facts it was shown that only 18 per cent of these cases consulted the clinic in the first three months of their illness, about 50 per cent in the first six months and only 83 per cent came to surgical treatment in the first year of their illness (an average of 10.3 months for all cases), a very late stage of the disease for satisfactory surgical care. About 4 per cent of the cases showed a tumor at the time of the first symptom. The great inadequacy of methods of stomach examination and the great danger of delay make it imperative that all doubtful cases be immediately sent by the general practitioner to a stomach specialist or to a surgeon. No doctor can say whether the tumor is or is not operable, and all doubtful cases should be given the advantage of an exploratory laparotomy. He shows that the average time from the appearance of the disease to the time of operation for cases whose pylorus was resected is 9.5 months, while the time for non-radical operations was 11.2, a difference of 2 months in which the cases have passed over the stage of operability. The author concludes that we have little to expect from improved technique or improvements in the methods of stomach examination. The cases will seek a surgeon earlier only by a more thorough instruction of the general practitioner, and the laity that salvation lies in seeking surgical aid early. There is a definite relationship between duration of the disease and its operability.

Peritonitis. Reviewing the growth of the modern treatment of peritonitis, quoting the published result of various operators, we find the majority of them differ from one another only in some slight modification of technique.

Robson (Lancet, Dec. 29, 1907) considers the salient points of treatment to be: 1, removal of the cause with or without irrigation of the peritoneal cavity; 2, drainage of the site of operation and of the pelvis, aided by the semi-sitting posture; 3, rapidity of operation; 4, avoidance of unnecessary exposure and handling of the viscera; 5, the prevention of shock; 6, the administration of saline fluid by the rectum; 7, rectal alimentation and stoppage of mouth feeding; 8, the avoidance of opium, and sometimes the administration of repeated small doses of calomel after operation.

It is interesting to note that a similar degree of success has been attained by many surgeons, though one favors the promotion of intestinal rest by the administration of opium, another advocates free action of the bowels by saline or other purgatives, one believes in local irrigation without subsequent drainage, while another is content with mere local sponging and tube drainage.

These are the results chiefly of the treatment of peritonitis due to perforation or necrosis of the lower portion of the intestinal tract, as exemplified by acute appendicitis.

Buxton (Jour. Med. Research, 1907, XVI.) shows that bacteria are rapidly absorbed after injection into the peritoneal cavity, in five minutes being found in the blood, and in great numbers in the lymph nodes of the mediastinum where they go after rapid absorption from the diaphragm. The omentum is the only other part of the surface which takes part in this absorption. When colon and typhoid cultures are injected into the peritoneum if death follows it is within two hours after injection, or not until twenty-four hours, because these bacteria contain endotoxins, which are not liberated until the organisms are disintegrated, and if the numbers of bacteria taken up are great the liberated dose of the poison is so intense that it is overwhelming. But should the animal survive, it may die later when the organisms have multiplied sufficiently. Streptococci on the other hand are not so rapidly destroyed after injection hence a primary overwhelming with endotoxins does not occur, and death does not follow until there has been a great multiplication after twenty-four hours or more. In acute peritonitis the thing to guard against is the absorption of bacteria themselves, and as these enter through the lymphatics, particularly of the diaphragm, the effort should be made to keep the infection low down in the abdomen and pelvis. Irrigation favors the dissemination of bacteria and should be avoided, as should sponging and similar measures.

General Peritonitis Following Appendicitis.—Fowler (N. Y. State J. of Med., Oct. 1907).—The report is based on 145 consecutive cases of diffuse peritonitis. Operation was not refused those almost moribund cases, for occasionally miraculous recoveries ensue. Six cases died in the course of operation. Cure in those cases surviving the operation was 62 per cent. Twenty-eight cases died in the first twenty-four hours, 16 died in the second twenty-four hours. The incision was small, the appendix removed, after packing off with wet sponges wrung out of 1-3000 bichloride. The immediate neighborhood is flushed with a warm solution of equal parts of peroxide of hydrogen and bicarbonate of soda, followed by salt solution. In the first one hundred cases peroxide irrigation was used for pus collection in the pelvis and elsewhere in the cavity, but in the last forty-five cases peroxide had not been used above the umbilicus except for separate collection of pus. The whole abdominal cavity was completely flushed with salt solution, introduced through a Chamberlain douche nozzle. The average time of operation was twenty minutes. Whenever necrotic abscess cavities existed these were drained with gauze wicks brought through the wound, in addition to whatever form of pelvic drain was used. In 116 cases glass or rubber tube drains with gauze wicks were introduced into the pelvis and this pelvic drain was made long enough to allow a separate bundle of gauze dressing to be attached to it, and to allow the changing of these dressings independent of the dressing of the wound. Six cases were drained through the vagina. Three cases were closed without drainage and all recovered. Those cases which can be closed must have no necrotic areas, and there must be no blistering, desquamation, swelling or infiltration of the serosa. Directly after operation the patient is placed in the elevated head

and trunk position; those with much shock cannot be raised as high as the others for the first few hours. Saline enemata of a pint or quart are given every three or four hours. The average stay in bed of cases recovering was twenty-two days.

The Treatment of Diffuse Suppurative Peritonitis.—Blake (Am. Jour. of Med. Sciences, March, 1907).—The report is on 99 cases with a definite purulent exudate, extending throughout the greater part of the peritoneal cavity. Seventy-eight cases were due to appendicitis, 13 followed perforating ulcer, 8 were from perforation in typhoid. The principles of the treatment were to remove rapidly the origin of the inflammation, to irrigate the peritoneal cavity, and not to drain the general peritoneal cavity. The desirability of washing the peritoneal cavity is disputed, but the chief objection to the author's mind is the additional time required. The double current irrigator is used with normal salt solution until all the septic material is removed, and by its use it is claimed that septic material is not diffused. Washing in this way accomplishes more quickly and effectually what the drainage of the cavity is intended to do. This washing is done through a small opening, which is later partially closed and a small drain inserted down to the peritoneum, unless deep drainage is indicated, such as imperfect removal of the cause of the peritonitis, necrotic material, or oozing. The patient is returned to bed in the Fowler position. Intermittent irrigation for forty minutes at a time, of the colon through a double rubber tube every three hours for two days, or a constant slow method by syphon is used. The stomach washed out, and no food given until peristalsis is established. Blake believes that the improvement in the results of treatment in this class of cases has been general and does not depend so much on whether lavage or general drainage has been employed as upon the increased rapidity of getting the patient off the table, the use of large quantities of fluid by bowel, rest for the gastrointestinal tract, and possibly the Fowler position. Of the 78 cases of peritonitis, caused by appendicitis, death occurred in 15 (19.2 per cent mortality). Of these half were drained. Of those recovering, 31 were not drained, 28 were drained to the appendix stump and 4 drained to the pelvis. Of the 13 stomach ulcer ruptures 4 died (30.7 per cent), 3 of these perforating over 36 hours before admission. Of the death and recoveries half of them were drained to the suture line. The other half not, only one case being drained to the pelvis. Of the 8 typhoid cases 4 died (50 per cent), 3 were drained and one drained to the pelvis. Of the 4 recoveries, 2 were and 2 were not drained into the pelvis. The abdominal wounds were drained in all cases. The author's personal impression was that patients made a smoother recovery when not drained.

Monk (Bost. M. & S. J., June 20) recommends opening the bowel in several places and *flushing the intestinal canal* with hot salt solution, in cases of *general peritonitis* where he believes the absorption is as great from the inside as from the peritoneum. The case in which he tried this method was one of strophococcus peritonitis so grave that there seemed no hope for the child. The first opening was made high up in

the jejunum and a large quantity of salt solution directed down the canal, the next opening a few feet below, from which a great quantity of salt solution and intestinal contents and gas were discharged, then salt solution was introduced through the opening, the effect of the hot solution being immediately shown by improvement of the pulse and general condition. The peritoneal cavity was irrigated and a cigarette drain introduced into the pelvis. A rectal tube introduced soon after let a great quantity of feces and water pass. The child recovered.

H. Hoddick (Zentralblatt f. Chirurgie, No. 41, 1907) gives his experience with intravenous injection of *adrenalin* in salt solution in cases of *general peritonitis*. The operative technique is to make a small opening, sponge out the pus without eviscerating, removing the cause of the trouble, and to pack with iodoform gauze which is left in place from five to eight days. At the operation the condition of the patient does not always require the adrenalin, but it is a rule to give immediately from 750 to 1000 c.c. of salt solution with from 6 to 8 drops of adrenalin into a vein taking 20 to 30 minutes to complete the flow. This is repeated later if necessary. The heart is stimulated in this way and elimination is rapid. The results before this injection was used were 14 deaths in 20 cases, since the method was introduced there has been only 3 deaths in 16 cases.

Typhoid Perforation. In reviewing the numerous articles on typhoid perforation we will mention only the points on which there is a discussion, as it is evident that in most of its phases this subject is familiar to the profession. Pain usually sudden and severe, occasional slow and not intense, is regarded as the symptom to indicate the condition in the great majority of cases. Tenderness and rigidity are regarded most valuable signs. The perforation is most frequently in the ileum within 18 inches of the ileocecal valve. The frequency of perforation is more common than generally supposed, variously stated from 1.2 per cent to 11 per cent, the statistics of Harte and Ashurst placing it at 2.54 per cent, and they state that one-third of the deaths in typhoid are due to perforation. Perforation is most common in the third week of the disease.

Harte (Boston M. & S. J., July 18, 1907) reviews the work in *typhoid perforation* at the Pennsylvania Hospital, Philadelphia. Operation has been performed on 80 cases, 15 recovered, giving a mortality of 81.25 per cent. In 600 cases he analyzed the mortality was 75 per cent, which he regards as too favorable because the reported cases are most likely to be the cured ones. He operates as soon as a diagnosis is made, uses general anesthesia (ether sometimes preceded by ethyl chloride) because ether is a heart stimulant, and because he can work faster than with cocaine. A right sided incision is used, the perforation is usually sutured but occasionally an artificial anus is established. If the operation is done early and the peritoneum is not much involved gauze will cleanse it, but if the infection is far advanced and the pelvis is filled with fluid, the abdomen is thoroughly irrigated with salt solution. Drainage is maintained by gauze rolls in the places where the fluid is wont to accumulate, in the pelvis, the loins and between the folds of intestine and

along the suture. In typhoid he does not believe in the Fowler position, because the patients are exhausted, and frequently toxic and delirious. No food is given until the fourth day. In cases of doubt he operates, and does it early.

Scudder (Boston M. & S. J., July 18, 1907) in discussing *mistaken diagnosis in cases of typhoid perforation*, groups mistakes as (1) those in which no lesion is found, (2) those in which the lesion does not involve the peritoneum, (3) those in which the lesion is found inside the abdomen involving the peritoneum. In the second group are cases of pneumonia, gastritis, enterocolitis, hemorrhage—Zenker's hemorrhagic degeneration of the abdominal muscle and distended bladder. To the third group he assigns cholecystitis and perforation of the gall bladder, which is most frequent, rotation and strangulation of Meckel's diverticulum. Femoral and iliac thrombosis, and ovarian cyst infection. He reports a case in which the pyosalpinx was due to a pure typhoid, which ruptured, produced peritonitis, was operated and recovered.

Farrar Cobb (Boston M. & S. J., July 18, 1907) reports on 20 cases of *typhoid perforation*, operated at the Massachusetts General Hospital, and in addition there were 3 cases operated under a mistaken diagnosis. There were six recoveries, 70 per cent mortality. Those recovering were operated respectively 23, 24, 23, 12, 8 and 6 hours after perforation. Of those dying 8 cases were operated within an interval of less than 12 hours after perforation. Cocaine was used in one case followed by ether, in the rest ether alone was used. In all but one case the perforation was closed, but at autopsy on one case the question was raised whether the cause of death was not largely due to intestinal obstruction because of excessive inversion of the intestinal wall. He believes that certain typhoids are so sick that perforation and spreading peritoneal infection cannot be diagnosed until wide and fatal. Some cases may have sudden perforation and free extravasion, with fulminant symptoms, in which operation must be done at once. Mild (typhoids) are marked by less severe symptoms usually localized, the severe symptoms follow general peritonitis, and leucocytosis in this case may give valuable corroborative evidence, but operation should be done in suspected cases whether or not there is leucocytosis. Only one case had the abdomen closed without drainage and it died. Pelvic drains were generally used, tubes either glass or rubber in a few cases in addition. In four cases no irrigation was used, one recovered.

Allaben (J. A. M. A., August 17, 1907) gives a statistical study of *perforation in typhoid* and shows that the treatment is giving better results recently. Up to 1903 there were 362 cases operated with a mortality of 74 per cent. From 1903 to 1907 there have been 162 cases reported with an improved mortality of 62 per cent. While the prognosis is always grave, it is modified by several factors. (1) The physical condition previous to infection, (2) the character of the infection, (3) the character and virulence of the peritoneal infection, (4) the age of the patient, (5) the time elapsing between the perforation and the operation. He shows that in 81 cases operated within 8 hours after perforation

the mortality is 45 per cent. In outlining the treatment, rapidity counts much. He does not irrigate or sponge because he believes this causes spread of the infection and favors absorption of the toxins. He drains into the pelvis with (Fowler) tubes and uses Fowler's posture, and gives saline solution to illminate the toxin.

Selby (J. Am. A., June 22, 1907) gives the mortality of typhoid perforation after operation as 75 per cent in 400 cases. He considers muscle spasm the most valuable physical sign.

After Treatment. In a symposium on the care of abdominal wounds and after treatment J. M. Baldy remarks that if his patient had gone from the operating table free from sepsis, hemorrhage and shock, that the after treatment is of little importance as far as recovery from the surgery is concerned; it is of principal importance as to the relative comfort of the patient. Simplicity is the key note. Rest and time are the panacea. His idea is to do nothing by routine. Feed at the end of 48 hours, give small doses of morphine if necessary. He sees no advantage in letting routine cases stay abed longer than two weeks, but in some worn out cases forcing them to get up in this time is irrational, in 24 hours, brutal. He does not believe prolonged rest in bed has any danger such as thrombosis, embolism, or phlebitis. He admits patients can be up and home in a week or ten days, but he denies that this is best for many of them, as they should be sent home well, not soon.

H. J. Boldt is an extremest and believes that in all but 10 per cent to 15 per cent of the cases, with a properly applied adhesion plaster scultetus the patients can and should be out of bed in 24 hours. Counter indicants are frequently vomiting, rapid or irregular pulse, and elevated temperature. By this early mobility he claims food is better assimilated, circulatory disturbances less likely (thrombosis and pulmonary sequelæ), intestinal peristalsis is quickened and peritoneal adhesions fewer. If there is no special reason for inducing an action of the bowels earlier than the fourth or sixth day the use of enemata or cathartic is omitted until then, when a spontaneous action usually takes place. If oozing or peritonitis is likely patients are kept in bed longer in the Fowler position.

A. Laphorn Smith strikes a moderate note in the after treatment of abdominal sections. Thirst is relieved by enemata, vomiting is controlled by ice compresses to the throat, mustard plaster to stomach, and administration of a rhubarb and soda mixture which contains 10 drops of spirits of chloroform to the dose. Water ad libitum on the second day, gruel on the third day, but no milk is given during the first week because of fermentation. Toast and bread and butter is given with gruel after the 4th day and everything but meat by the end of the first week, and a full diet after the second week. Strychnine (1-30 gr.) t. i. d. Enemata every day to bring away a little gas. Morphine gr. $\frac{1}{4}$ is given immediately after operation. Beginning the fifth night compound cathartic pills are given. The most comfortable position is on the side with the knees drawn up relieving the tension on the wall and sutures. If the patient prefers to be on the back the shoulders and knees are raised. The

Fowler position is used in infectious conditions. Patients are kept abed three weeks.

In the discussion of these papers it was seen that not many of the operators were in favor of Dr. Boldt's radicalism, although it was agreed that in some cases it was essential to have the patient out of bed very early.

J. H. Gibbon (An. of Surgery, August, 1907) deals with the same subject. Morphine ($\frac{1}{4}$ gr.) is given by him as a routine either before anesthetizing or just before the patient recovers consciousness. This with the smaller amount of anesthetic, which is ethyl-chloride-ether sequence in his practice, makes nausea and vomiting much less. Solid food is given to the third day, when the bowels are moved. Previous to this enemata may be given. Patients are allowed up in clean cases on the 8th or 9th day. In discussing this paper J. B. Deaver said that instead of patients usually being neglected they received too much attention. He used ether alone, never has used scopolamine, objects to morphine except very occasionally, and does not like the indiscriminate use of strychnine. His hysterectomies are urged to turn on their side early and are out of bed in a week.

H. W. Vineberg (Surg. Gyn. and Obst., August, 1907) gives his experience with eserine salicylate as a prophylactic against atony of the bowels. He finds it free from danger if given at the end of the operation, but should not be given to patients in which meteorism is present. Thus far the evidences are in favor of its being of some value, especially so to counteract the paralyzing effect of morphine, which is usually necessary in the first hours after a laparotomy.

K. Vogel (Mitt. a. d. Grenz. d. Med. u. Chir. Bd. XVII. Hft. 5), who says he was the first to suggest the use of eserine in 1904, gives the further results of the method. He gives castor oil two days before operation, immediately after operation eserine salicylate (1-60 gr.) is given, one hour later a glycerin enema and the treatment is repeated in 5 or 6 hours. Flatus is passed freely and shortly after the operation the bowels move. Peritoneal adhesions do not form and ileus is prevented.

Ileus. In a symposium on ileus at the 1907 meeting of the American Medical Association Lennander discussed the question of *abdominal pain*. Inasmuch as the abdominal viscera are only supplied by sympathetic fibres pain does not originate within them, but does originate in the parietal serous and subserous membranes which are innervated by spinal nerves. Stretching of the parietal and mesenteric attachments of the stomach and intestines as well as strings or band-like adhesions to the abdominal wall, invariably elicit pain, as does anything that displaces the parietal serosa. Pain in intestinal perforation is due to a chemically different substance coming in contact with the serosa. The sensitiveness of the parietal peritoneum increases *pari passu* with the inflammation, but later decreases when the inflammation reaches a certain high degree. He believes he disproves Nothnagel's hypothesis that colicky pain is due to pressure of the muscular on the nerve ends in the bowel, or that it is due to anemia of the distended loops.

Cannon and Murphy continuing the experimental intestinal observations which have been reported in the past few years, show that *dynamic ileus* can be produced from general asthenia and from inhibitory impulses through the splanchnic. This reflex in the experiments on the etherized animals is induced by crushing the testicles. If, however, the splanchnics were divided there was no reflex paralysis of the stomach and bowel. They previously have shown that exposure of the guts to air and unusual cooling or the administration of ether over a long period did not produce postoperative paralysis, but that the handling of the gut was immediately followed by paralysis even if the splanchnic were divided, which proves to their minds that the paralysis is not reflex from the spinal cord, but due to the disturbances of the local mechanism in the wall of the gut. They have not yet worked out the seat of trouble after section of the gut and suture, or peritonitis, but it would seem that it were central, inasmuch as local stimulants applied to the gut do not urge peristalsis, while on the other hand if the inhibition is central anything that will block the splanchnic impulses, such as physostigmin, will allow the local plexus to work. They found physostigmin salicylate acted well for a short time on those cases where the splanchnic reflex had been induced by crushing the testicle.

The Technique of Pancreatectomy.—Desjardins (Revue de Chir., XXXV., No. 6), says that the removal is not incompatible with life. Billroth and Franke have done the only two total pancreatectomies, both with success, and later the patients presented no trouble due to loss of the organ. Many partial pancreatectomies have been performed. Of 30 collected cases, there were 9 partial resections of the tail, all but 3 for malignant tumors. There were 2 complete resections of the head, and these alone, Desjardins calls true pancreatectomies. There was one in which the body of the pancreas was removed, leaving the head, which avoided sectioning the common bile-duct, and left the tail. This was done for a chronic sclerotic pancreatitis.

Of the 30 cases there were 16 operative cures and 14 deaths. Of the 2 total pancreatectomies, both were cured; of the resection of the tail, 7 cures and 3 deaths, of the partial of the head 7 cures and 9 deaths, of the total head 2 deaths. In spite of the good results in Billroth's and Franke's cases, Desjardins does not think that we have a right to do total pancreatectomies, the partial alone being justified by physiology. It is necessary to remove the corresponding part of the duodenum with the head of the pancreas, since both are supplied by the same blood vessels, they are intimately adherent to each other, and it is necessary to remove also the retroduodenal lymph glands. The three dangerous zones are: First where the ascending colon is adherent to the second part of the duodenum. It is necessary here to avoid wounding the colon. The second zone is where the mesenteric arteries emerge from the border of the pancreas, passing in front of the duodenum. The middle colic artery may here be wounded, giving rise to gangrene of the transverse colon. The third danger zone is posterior, where the portal vein and inferior cava are in danger. All three zones can with care be avoided. The careful

detachment of the parts is the key to the success of the operation. The head of the pancreas and the duodenum surrounding it are detached *en bloc*, the duodenum near the pylorus and the beginning of the jejunum being divided between clamps. The common bile duct is divided as near as possible to the duodenum, and the body of the pancreas, including the duct of Wirsung, is divided also. When the removal of the head of the pancreas and the duodenum has been concluded, the pyloric end of the stomach is closed, and the upper cut end of the jejunum is implanted into the stomach, making a gastroenterostomy. The open ends of the common bile duct and the freed end of the duct of Wirsung are implanted into the upper end of the jejunum, one on one side and the other on the other side. The cut face of the pancreas is tied off in sections around its duct for hemostasis. This operation is possible only when the common bile duct and the duct of Wirsung are dilated sufficiently to receive the button of Boari, which is employed to make the connections with the jejunum. In such a case about 30 cm. of the upper end of the jejunum is cut off from the rest, still preserving its attachment of the mesentery. The then upper end of the jejunum is employed for a gastroenterostomy. The isolated piece of jejunum is anastomosed by one end to the gall bladder and by the other end to the cut end of the stump. The bile and pancreas fluid can thus escape only through the new common passageway made up of the isolated portion of jejunum, which is now anastomosed to the remaining jejunum just below its attachment to the stomach. The Mayo Robson cushion to the back is used, and either Kehr's or the author's incision.

The Treatment of Fistula of the Pancreas.—Heineke (Zentr. f. Chir., 1907, No. 10).—The duration of fistulæ often opening a pancreatic cyst or draining a ruptured pancreas and the excoriation accompanying, make very trying conditions to deal with. To avoid the maceration of the skin and also to shorten the time of healing, the hydraulic empyema apparatus of Perthes is used. The eventual closure of the fistula is brought about by using the suggestion of Wohlgemuth, who found that with a fat diet the secretion was lessened, with a proteid diet the secretion was increased while with a carbohydrate free diet the secretion was practically stopped. Further he noted that with an acid the secretion was increased while alkalies decreased the flow. A combination of a diabetic diet with small doses of sodium bicarbonate decreased the flow and allowed a fistula to close in a very short time. A case is reported of a traumatic rupture of the pancreas drained through the gastrocolic omentum, that secreted 500 c.c. a day for a time, then closed spontaneously for a day, to again break open and discharge from 50 to 100 c.c. a day. Three days after beginning a carbohydrate free diet the fistula closed.

Perineal Extirpation of Cancer of the Anus and Rectum.—Dolore and Chalier (Revue de Chir., XXXV., No. 5) says that the operation for artificial anus should be reserved for inoperable cases, and that these are being diminished in number as time goes on. Without passing judgment on the sacral method of Kraske, or the abdominoperineal operation, Delore and Chalier believe that the perineal route, or, better, the coccy-

perineal, sufficient in the great majority of cases, if they are attacked early, and that it is available for the anorectal cancers or the cancers of the rectum proper, even the more extensive cases, such as the diffuse cases, the supra-ampullary and certain varieties of the rectosigmoid cancers. Delore and Chalié have operated on 19 cases, 2 of which were epitheliomas limited to the anus, 6 diffuse anorectal epitheliomas, and 11 cancers localized to the rectum (7 of the ampulla and 4 supra-ampullary); 2 were simply excised without amputation of the anus or rectum. The coccyperineal operation permits the wide and sufficient removal of the growth in the majority of cases, without the mutilation of the Kraske or the dangers of the abdominoperineal operation. A temporary artificial anus was performed in one case and gave perfect results. They did not employ it more frequently because of the difficulty in obtaining the patient's consent. They are not in favor of a permanent iliac anus, to obviate the difficulties of an incontinent perineal anus. They believe that the latter is better than a partially continent iliac anus. If the anal cancer is large and extends into the rectum, it will often be serviceable to curette and cauterize the external protuberant portion as a preliminary operation. This will permit more easy and thorough asepsis of the region and closure of the anus at the time of the operation.

The lithotomy position is employed. The incision surrounds the anus and extends forward in the median line a short distance, and backward to the coccyx, which is excised. The rectum with the invaded tissue and the sacral lymph glands are liberated *en masse*. This can be done up to the promontory of the sacrum posteriorly. The rectum is then liberated anteriorly, high up. The vagina can, with care, often be saved. By drawing down the mass the peritoneum is exposed anteriorly and opened with scissors, when gauze is introduced to protect the peritoneal cavity. The sheath of the rectum and the surrounding tissue are then divided, and by a sort of unsheathing of the rectum the mass can be brought down farther. The anterior cul-de-sac of peritoneum is then closed by suturing the cut edges of peritoneum in front to that of the pelvic colon drawn down. The intestine is then cut between forceps, the lower end with the mass is dissected out, and the upper cut end brought down and sutured to the skin about in the position of the normal anus. Iodoform gauze is used for drainage in front of and behind the rectum, and a rubber tube and gauze are introduced into the rectum. The operative mortality in the 19 cases was 10.5 per cent. So far as the late results could be ascertained they were very good as to duration of life. One woman, sixty-eight years old at the time of operation, was free from recurrence eight years later.

Results of Radical Operation for the Cure of Breast Carcinoma.—Halsted (Ann. of Surg., July, 1907). The paper is in part statistical, but much space is given to general consideration of the subject. Two hundred and ten traced cases, operated upon more than three years before, form the material for study. The percentage of cures (using the three years limit) was 42.3. Of the pathologic varieties the adenocarcinoma offered the best results, 75 per cent of the cases being cured; while large infiltrating scirrhus, which numbered the most cases, was

hard to cope with, only 35.5 per cent being cured. In sixty-four cases no glandular involvement was discovered after the most careful search, yet in fifteen of these there was metastasis or recurrence of some sort sooner or later—in six, three years after operation. The percentage of cures for three years for this group was eighty-five. Of 110 cases with the axilla involved and a negative neck, there was 24 per cent cured. Of the group with the glands of the axilla and neck both involved, five cases remained well three years and thirty-four were not cured. The supraclavicular operation was urged in all cases with palpable operable neck involvement, or when the apex of the surgical axilla is involved. When midaxillary involvement is demonstrated the neck is almost certainly involved and should be cleaned of all its lymphatics as high as the bifurcation of the carotid. The neck operation can be omitted in hopeless cases, in most "duct cancers" and in adenocarcinoma when the axilla is uninvolved. The operation mortality in 232 cases was 1.7 per cent.

Halsted is convinced that cancer of the breast is but very rarely disseminated by blood vessels, but the growth is spread centrifugally along fascial planes, even reaching the bones by permeation, the bones involved being those beneath the surface involvement, the forearms and lower legs being practically free.

In operating on "cancer cysts" it is absolutely essential that the diagnosis be made on the operating table by the surgeon noting the barely thickened point, the slight lack of luster, the faintest difference in color and in texture, and his suspicions should be aroused by the presence of blood-stained fluid. If the cancer is diagnosed and a complete operation done upon these cysts the results are the best in breast surgery, but if a complete operation is not done until later the prognosis is hopeless.

As cases are coming to the surgeon earlier than ever before, the diagnosis of these earliest cases becomes a refinement which requires great care and precision and the cases must be studied longer and more carefully, and our suspicions aroused when there is the slightest limitation of the excursion of the skin over the breast with the nodule as compared with the healthier organ, and in suspicious cases exploratory incisions should be made, not into the growth but down to it, and a diagnosis made from the fibrous appearance and shortening of the surrounding trabeculae. In scirrhus the disease may be active and metastasis occur long before the visible or palpable tumor is developed.

To close the breast wound more or less regularly by any plastic method is hazardous and should be vigorously discountenanced. Remove a large circle of skin and graft the defect if the wound cannot be closed. After incomplete operations the local manifestations of recurrence are almost invariably deplorable and the prognosis hopeless, and recurrences are relatively later when vigorous chemical caustic or actual cauterizing has been employed.

He is of the opinion that toxins are generated by the cancer and cause disseminated pains in knees, legs, arms and back which suggest cancerous involvement and that by removing the growth these pains are lessened. There is also a reactionary, boardlike edema of the pectoral

region occasioned by the presence of an undemonstrable growth which is later followed by rapid cancer growth.

Carcinoma of the Breast.—Greenough, Simmons, Barney (An. of Surg., July, 1907).—Out of over 400 cases of primary operations for cancer of the breast at the Massachusetts Hospital from 1894 to 1903, inclusive, 376 were traced to a conclusive end result at an average period of eight years after operation. Sixty-four cases were alive and well and seven died without recurrence, over three years after operation. Counting in the operative mortality, there were 320 attempts at radical cure, sixty-seven of which, or 20.9 per cent, were successful. During this same period palliative operations were performed on fifty-six patients (15 per cent), and fifty-two cases were discharged untreated. Cases in which the tumor was ulcerated, or was adherent to the skin or to the chest wall, and cases in which the axillary glands were palpably enlarged, gave notably less promising results than when these conditions did not exist. No cases with palpably enlarged cancerous glands above the clavicle, and no case of cancer of both breasts, was cured. Medullary carcinoma was more grave than that of the scirrhus type, and adenocarcinoma and colloid were relatively of a far less malignant type. The duration of the disease, other than in the individual case, exerted little influence on prognosis. Extensive operations with wide removal of the skin gave the greatest freedom from local recurrence. Removal of the pectoralis minor appeared to be of slight significance. Incomplete operations on early cases yielded better results than extensive operations in cases which were well advanced. Recurrence in the scar occurred in less than one-half of the cases. Internal metastasis was most frequent in the lungs, mediastinum, in the axillary and supraclavicular glands, the liver and the spleen. Seventeen out of eighty-eight cases, or 19 per cent of those passing the three year limit without evidence of recurrence showed recurrence later, and four cases developed recurrence six years or more after the operation.

End Results Following Operations for Carcinoma of the Breast.—Meyer (Surg. Gyn. Obst., July, 1907).—The author's statistics for operations done over three years before are compiled from sixty-three cases. Of this number twenty-eight lived from 3 to 12½ years after the operation (44 per cent). In one case of this series death from diabetic coma followed the operation. The author's complete operation was performed, the axillary contents and both pectoral muscles being removed. He does not believe it desirable to clean out the supraclavicular space at the time of the first operation, as in none of the thirteen patients that remained well from 5 to 12½ years were the supraclavicular glands removed. Edema of the arm has been noted in about 10 per cent of the cases and was then of a transient nature, due to the cicatrix, but in only one case did it persist. The post-operative neuralgia or neuritis of the brachial plexus has been temporary in every instance. If the disease has reached the supraclavicular nodes, there is little hope for a longer freedom from recurrence, as every case operated upon died soon after. If the breast is involved in the upper two quadrants, particularly if it involves the skin, the infection of the supra-

clavicular glands may be expected. He does not believe, however, that radical operation should be refused unless metastasis forbid. Radical operation should not spare skin, and for this reason he does not accept plastic operations, and even doubtful cases, he believes, far better by radical procedure than by an operation of less magnitude, or undue temporizing.

Carcinoma of the Breast.—Cabot (Ann. of Surg., July, 1907). His report is based on 42 cases in private practice. Of these nine are alive today. One case 19 years, and one case 14 years, one case 11 years and two cases 10 years, and one case each for 8, 7, 5 and 4 years. These non-recurrent cases were tumors of a mild type, 3 adenocarcinomas, 3 small scirrhous, one small plexiform medullary, one Paget's disease. In six of the cases glandular involvement was not found. From studying this small series of cases the author believes that the question of recurrence depends more on the character of the growth and the degree of involvement of the lymphatics than on the thoroughness of removal, as in 7 of the 9 the muscles were not removed. However, he believes that this should not be used as an argument against extensive radical operations, for it is impossible to tell how far the cancer cells have gone at the time of operation. He notes one case of a small nodule, situated in the center of the gland, in which he spared the pectoral muscle, but it was in the muscle that recurrence occurred, and since that he has removed the muscle in all cases.

Cancer of the Breast and its Operative Permanent Cure.—Finsterer (Deut. Ztschr. f. Chir., 1907, Bd. LXXXIX., p. 143) says that of the cancers of the breast operated on from 1877 to 1903, there was 12.5 per cent of permanent cures. In the last eight years the percentage increased to 24.64. The extent of the operation was always made to depend upon the local findings. The best method of operation is that which diminishes the general as well as the number of local recurrences, as by the most exact removal of lymph glands it diminishes the occurrence of metastases. An extensive removal of the overlying skin should receive close attention. The supraclavicular fossa should be cleaned out in every case, and absolutely so when during the operation the infraclavicular glands are found to be diseased or are considered to be suspicious. The question as to whether in the presence of demonstrable disease of the supraclavicular glands an operation is or is not justified, needs more exact examination. Cases are known which contradict the rule of simultaneous involvement of the supraclavicular and intrathoracic glands and pleura. To decide some cases, one must take into consideration the duration of the disease, the size and situation of the tumor (whether it involves the inner or the outer half of the mamma), the size and possible growth of the supraclavicular glands. On account of the frequency of late recurrences, the time limit of permanent cure should be increased to five years, and for the determination of the results, the ability of the patient to work should be taken into account.

End Results in Operation for Cancer of the Breast.—Dennis (Surg. Gy. Obs., July, 1907). Out of his large material 50 cases which passed the three-year limit were selected, but the author feels that this is much

too short a limit to use to predict a permanent cure. By following all these cases after operation he shows that cancer of the breast is sometimes permanently cured, or at least 25 years have elapsed with no evidence of return; that the cases may go as long as 18 years, and yet finally have a return in some other organ; that in the cases that had no return the operation was performed within six months from the incipency of the disease, thus showing the importance of early operation; that the more radical the operation within reasonable limits the better the prognosis. He believes that in some cases in which the outlook is most unfavorable, as manifested by extensive hemorrhage and widespread axillary involvement, the end results have been entirely satisfactory.

Goitre.—Crile (Lancet Clinic, Dec. 7, 1907) directs attention to the great improvement in results of operation upon the thyroid, which he says is due to (1) the improved technique (there are few operations in which the result is so definitely due to the technique as in operations on the thyroid), (2) that the greater number are presented during the time that they are still fair surgical risks, (3) that the importance of the parathyroids has been recognized, (4) that in Graves' disease surgeons have found by increased experience that operations require the greatest gentleness and precision, that the operation must be fashioned according to the gravity of the case, that cases must be suitably prepared for operation and that unless a patient can be finally brought into a physical state of a fair risk operation must be deferred. He emphasizes the importance of the removal of thyroids that are enlarging during the cancer period of life as 10 per cent of his cases have been malignant. In Graves' disease of severe variety he recommends first trying Beebe's serum, which is to be repeated if there is a relapse. If the case does not respond to the serum use the Kocher method of gradual approach to the operation, and the progressive surgical treatment as it seems safe. He believes excision is the solution of the relief, and that if the Graves' disease itself is not due to pathological alterations in the thyroid gland, the thyroid gland at least is one link in the chain of causes, and the cycle is broken permanently by thyroidectomy. In such cases as are profoundly toxic the suggestion is made to bleed the patient and then directly transfuse blood. He has operated 157 times upon the thyroid, in the last 101 cases without a fatality.

Notes on Thyroid Tumors.—Barker (Practitioner, Sept., 1907).—In considering the kind of anesthesia to use in removing thyroid tumors the choice is given to a local anesthetic which gives a most effective analgesia, and is applied by a method rather different from that ordinarily practiced. A two per thousand of B. Eucaïne in normal saline is prepared fresh by adding a powder containing 3 grains of sodium chloride to 3½ ounces of water, which is boiled in a glass flask for a few minutes, then cooled to blood heat. To this, when cooled, is added 10 drops of 1-1000 adrenal chloride. A line following Kocher's incision is injected in the skin with an ordinary hypodermic needle. A blunt, probe-pointed, long needle is then used, with a lateral opening near the point. It is thrust through a small opening into the subcutaneous tissues and about 30 c.c. of the solution is injected across the neck; then the solution is in-

jected upward, outward and downward from the outer end of the incision. The fluid thus diffused will cause an artificial edema, which will cross the track of most of the cervical nerves supplying the skin in the field of operation. A further injection is made around the capsule of the gland on both sides. These injections, which may use as much as 150 c.c. of fluid, are made with the patient in bed in the ward. At the end of 40 minutes the anesthesia is at its height and the patient is removed to the operating room where, with a nervous case, after a preliminary injection of morphine, the operation is done without pain in an area which has entirely lost its edema, and the field is practically bloodless. Adrenalin delays the effect of B. Eucaïne, but prolongs it up to two and a half hours. He reports twenty-two thyroid operations; every one healed without a flaw, in most without any drainage. It is also noted that hardly any ligatures were employed.

Surgery of the Thyroid.—Ferguson (Med. Herald, May, 1907).—He believes that surgical intervention in all but exophthalmic cases should only be followed after other methods have failed to relieve the patient of symptoms incident to the enlargement. In 300 cases he found that thyroidectomy was done for dyspnoea in 77 per cent, for deformity in 24 per cent, dysphagia in 8 per cent, tracheal stenosis in 3 per cent, for malignancy in 2 per cent. In a third of the cases a multiplicity of signs and symptoms was the indication. He gathers from Kocher's work the importance of the condition of the cardio-vascular system in determining operation, and seconds the sound advice of Kocher, not to operate in Graves' disease as a last resort. Kocher's exophthalmic cases operated numbered 176 with a 5 per cent mortality; 158 were traced after operation, 81 per cent were cured, 7 per cent greatly improved, 10 per cent improved and two died. The mortality in other hands is 15 per cent, 8.66 per cent, 28.5 per cent. Ferguson has operated on 58 cases, 44 simple or cystic goitres, without a death, 12 exophthalmic cases were 4 deaths, and 2 malignant cases. Eight of the exophthalmic cases were cured. The simple cases may have the wounds closed, but in exophthalmic or malignant cases the wounds are drained with rubber tissue wicks.

Surgical Treatment of Exophthalmic Goitre.—A. Kocher (J. A. M. A., Oct. 12, 1907).—Out of 3,460 goitre operations at Berne 315 have been done on 254 patients with exophthalmic goitre. Of the last ninety-one operations performed on sixty-three patients there has not been a death, and of all the 254 patients only nine have died (3.5%). The improvement in death rate is not because severe cases have been refused, but because more prudence has been observed in operating, the technique has been improved, and the various operative procedures, such as ligating the arteries or excision, are done at different sittings. The strength of the heart is considered of the greatest importance. In many cases it is dilated, and if there is compensatory hypertrophy due to tachycardia, blood pressure is increased. A blood pressure of 105 c.m. does not forbid operation if the pressure is proportional to the degree and constancy of the tachycardia. If a marked development of the disease exists with low blood pressure which after exertion is followed by marked cardiac dilation and unmeasurable blood pressure, the case is never submitted to an im-

mediate operation. In a highly vascular gland with marked symptoms, the patient is prepared merely for a slight operation. In fifty-eight cases the blood was carefully studied and showed a marked increase in the number of lymphocytes and a decrease in the polynuclears. The increase of lymphocytes is proportional to the degree of the disease, and if there is no increase of lymphocytes the case is a serious one. Only in early undeveloped cases, or the late cured ones, is the lymphocytosis absent. The operation performed by Kocher is usually the enucleation of one lobe. Inasmuch as increased vascularization is necessary for the increase of the disease, ligation of the arteries is sometimes done alone, and sometimes in conjunction with partial excision. There has not been a single case in which the patient has not been benefited by operation. In all cases there has been 83 per cent of cures. There are 73 per cent of cures in the patients with the primary disease; 92 per cent of the cases having the disease combined with ordinary goitre, and 100 per cent of the patients with vascular goitres. Some of the observations date back seventeen years, and in some of the most severe cases it took a long time before the heart and eyes became normal. Those coming to operation after a long duration of the disease and secondary changes had taken place, were the hardest to cure. Ten cases were not benefited much, but in them there were symptoms of other diseases.

With careful preliminary observation it was found possible to operate in nearly every case. Repeated operations, with patients under observation in the meantime, are necessary in some cases. More than two arteries should never be ligated at one sitting. To remove more than half the gland at one sitting is dangerous, and it is rare that this is ever wanted. In the presence of distinct vascular symptoms one should operate immediately, ligating two arteries, or excising half of the gland. When at the height of the distressing disease, operation is not advisable. Operation is best done under cocaine. Immediate post-operative increase of disease is thought to come from expression of toxin in the gland.

Serum Treatment of Exophthalmic Goitre.—F. S. Bulkeley (N. Y. Med. J., Nov. 9, 1907), gives a careful review of the literature of this subject, and reports one personal case in which the serum gave very doubtful results. In this case, goitre was slight, tachycardia and tremor well marked, exophthalmos absent, and the other symptoms those usual in such cases. The thyroid was palpable and visible, but at the same time was no larger than is common in many healthy women. Thyroidectin was used in increasing doses. For a time it seemed to be of some benefit, but this effect was soon lost; in fact, it seemed to aggravate the symptoms. Later, Moebius serum was tried with practically the same results. Quinine hydrobromate was used for about five months, in doses just under that necessary to produce cinchonism. It seems to give positive results. The author notes that in the majority of reported cases not enough details are given to enable the reader to judge of the probability of cure or permanency of results. He sees no certainty of even the palliative action of the serum. The assertion has been made that the sera occupy the same relation to exophthalmic goitre that thyroid extract

doses to myxedema, but we can hardly accept this statement on the basis of the evidence furnished.

Roentgen Treatment of Exophthalmic Goitre.—Freund (Muench Med. Wochen. LIV., No. 17) reviews the experience of others in this line, citing nearly a dozen authors, and then reports five cases. The Roentgen treatment gave unmistakable benefit in all. The thyroid gland was reduced in size and as it subsided the nervous symptoms vanished with it and in two cases the systolic murmurs also. The patients all increased in weight. Two have been under observation for fifteen months without signs of recurrence. The Roentgen rays meet the causal indication by restoring normal conditions in the enlarged and morbidly secreting thyroid. They always exert a favorable influence on the nervous manifestations, while they are liable to effect favorably the heart murmurs, struma and exophthalmos. The soft, vascular tumors are the most readily influenced, and the prognosis is better the more recent the goitre. In one of his cases the patient was a young woman and the symptoms had attracted attention about six months before. Little improvement was observed under medical treatment for a couple of months, and two Roentgen exposures were made with a week's interval, with a moderately soft tube, 20 cm. distant, the exposure lasting eight or ten minutes. The struma rapidly subsided and no murmur or tremor could then be detected. There were no ocular symptoms at any time. In another case three exposures were made in the course of a week. In another, four in less than three weeks.

Incomplete Occlusion of the Abdominal and Thoracic Aorta by Metal Bands.—Halsted (Jour. Am. Med. Assn., Dec. 29, 1907). An aluminum band is used which can be manipulated either by an instrument or by the fingers to encircle a vessel, either completely or partially occluding the lumen. The bands were used experimentally on 100 dogs, and it was shown that the blood pressure below the band varied with the amount of occlusion. Partially occluding bands produce no macroscopic change in the vessel wall even after months, but when the lumen is almost but not occluded, complete occlusion may result spontaneously, and gives the ideal closure of an artery. In about three months after operation a large extra-dural pad of fat was noted in the spinal cord below the site of occlusion of the aorta. Partial occlusion of the large vessels can be used as a cure for aneurism. Dr. Halsted has successfully used the metal bands in the human subject, once partially occluding the innominate, the common carotid four times, and once to completely occlude the femoral. The use of ligatures in large vessels is usually followed by cutting through and secondary hemorrhage.

Concerning Ligature of the Common Carotid. A New Method of Ascertaining the Possible Disturbance of the Circulation.—Jordan (Arch. f. Chir., 1907), says that in 25 per cent of the cases reported by Pilz, Zimmermann and Krankepuhl, brain disturbances occurred, and 10 per cent died. Since we cannot ascertain how abundant are the collateral vessels, nor their capacity for dilatation, it is always difficult to determine the prognosis of a ligature of this vessel. To overcome this difficulty Jordan recommends a method which he has tried, successfully, on ani-

mals and in one case on man, i. e., the previous temporary, not firm ligature of the carotid for forty-eight hours. Since the brain symptoms dependent upon a lack of nourishment to the brain occur immediately after the operation; at the end of the first or in the course of the second twenty-four hours, if no trouble from the ligature occurs during this time, it is unlikely that there will be any grave consequence from occlusion of the carotid.

Experiments on lower animals show that the ligature did no damage to the intima. Senger, in 1895, employed the temporary ligature for the bloodless extirpation of a tumor of the thigh. The operation should be done under local anesthesia, in order that the effect on the brain may be observed, and the ligature withdrawn on the first appearance of any distinct symptoms. The ligature material may be a small linen band, a rubber band, catgut, or a forceps with its blades guarded with rubber covering. The chief point is to apply the constriction very carefully, until the temporal pulse disappears. A further indication for this procedure is to be found in the suture of arteries.

The Technique of Direct Transfusion of Blood.—Crile (Annals of Surgery, 1907) bases his remarks on 225 experiments upon animals and 32 clinical cases. The blood was transferred from the artery of the donor to the vein of the recipient. In the clinical transfusion the radial artery of the donor and the proximal end of any superficial vein of the arm of the recipient were employed. Unless contra-indicated, both patients are given a hypodermic injection of morphine twenty minutes before the transfusion begins. The donor is placed on a Trendelenburg table, so that if he should become faint the head may be readily lowered. The recipient is placed upon an operating table with his head in the opposite direction. Infiltration anesthesia of 0.1 per cent cocaine solution is employed, and the radial artery is exposed. A Crile clamp is applied to the proximal end of the artery and the distal end is ligated; the artery is divided; the adventitia pulled over the free end as far as possible and closely snipped off; a moist sponge now covers this field; 3 or 4 cm. of a superficial vein of the recipient is then likewise freed; the distal part ligated, the proximal closed with a Crile clamp; the distal part is divided with scissors, the adventitia drawn out as far as possible and closely snipped off; the vessels are then inspected, and a canula whose bore is larger than the actual tissue thickness of either vein or artery is selected. The vein may then be pushed through this tube, after which the freed end is turned back like a cuff and snugly tied in the second groove. The artery is then drawn over the vein and tied in the first groove with a small linen ligature. This completes the anastomosis. The clamp is then removed from the vein, afterward, gradually, from the artery, when the blood stream will be seen to pass from the artery across to the vein, dilating the latter. By this method intima comes in contact with intima, and the blood is transferred without clotting. The blood lost by the donor is regained in from four to five days, and the amount transferred is under the immediate control of the operator. The rate of transference should be carefully gauged, because of the risk of overcharging the pulmonary circulation.

BOOK REVIEWS.

MODERN CLINICAL MEDICINE.—INFECTIOUS DISEASES. Edited by J. C. Wilson, A. M., M. D. An Authorized Translation from "Die Deutsche Klinik" under the general editorial supervision of Julius L. Salinger, M. D. New York and London: D. Appleton & Co., 1905.

The appearance of "Die Deutsche Klinik" must be regarded as marking an epoch in the history of medical writing. The most eminent German clinicians have united in the attempt to produce an adequate presentation of the state of medical knowledge at the beginning of the twentieth century. The object of the series of volumes seems to be not so much an exhaustive account of all that is known of the various diseases but rather a critical discussion of our present point of view and of the problems still awaiting solution. Strange as it may seem, the English translation is in some ways decidedly superior to the German original. It contains all that "Die Deutsche Klinik" does, as well as many emendations on the part of the editors and additional chapters on subjects that were not treated in the original. Thus the first volume of the series on Infectious Diseases contains articles on Vaccinia, Varicella, Dengue, Yellow Fever, Weil's Disease and Malta Fever, by J. C. Wilson, that do not appear in "Die Deutsche Klinik." Among the Germans, F. Klemperer and Liebermeister discuss typhoid; Loeffler, malaria; Heubner, measles and scarlatina; Baginsky, diphtheria, and so on down the list.

DIE BEHANDLUNG DER TUBERKULOSEN. Wirbelsaulentzündung von Dr. F. Calot. Verlag von Ferdinand Enke, Stuttgart.

This work is translated by Dr. Ewald, assistant to Prof. Volpius at Heidelberg, and contains a preface written by Dr. Volpius. From Calot we have had several valuable books and pamphlets, giving in detail the treatment instituted by him at the Rothschild Hospital and at Berck. Dr. Calot's works always bear the earmarks of extreme care for detail. This present volume consists of 90 pages, profusely illustrated, on the subject of "Tuberculous Diseases of the Vertebrae." It is especially valuable in that it gives minute instruction as to the preparation of plaster of Paris bandages and their application. The treatment of abscesses is thoroughly described.

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EDITORIAL.

A CONTEMNER OF THOSE GALLIPOT FELLOWS.

Heine says that there is no man so crazy that he may not find a crazier comrade who will understand him; and though Mrs. Eddy does not preface her book by this witticism of the German Aristophanes, our recent perusal of that product of consummate periphrasis, "Science and Health," impels us to suggest that all future editions should flamboyantly carry the German poet's dictum. We feel that, in this respect, a grievous fault has been committed against the "lesser man," the being of small brains and weak understanding, for communities need him with his bread and tea sanities as much as they require the presence of the somewhat frantic enthusiasts of rampant intellectual ideas; in fact, in the economy of nature his position has been adjudged of the greatest importance by some of the gravest philosophers of today. And just because he represents the element which needs a strong hand for its uplift on account of hereditary traits peculiar to mental Under-work on the part of his ancestors, we feel that he might become the ready prey to the wiles of the subversive teachings of Christian Science. For "Science and Health," as interpreted by us, has, for the matrix of belief, the spiritual and medical analeptic that is soothing to those who live apart from the maelstrom of revolutionary upheavals, be they philosophical, theological or medical; to those whose theories are pieced together out of narrow social conditions, fragments of medicine imperfectly understood, and reasonings on small experiences. Moreover, who will gainsay the illimitable power of a modern St. Catherine of Siena, whose admirers think she has been annointed to wrestle with all manner of diseases such as consumption, which can be cured since there are no lungs to become tuberculous; small-pox, "mortal mind not matter contains and carries infection"; leprosy; cancer, which cannot withstand "such powerful eloquence as a legislator would employ to defeat the passage of an inhuman law"; malformed limbs, "as directly the action of mortal error as insanity"; and the loss of a human limb which can be replaced "as readily as the lobster's claw,—not with an artificial limb, but with the genuine one."

Thus we have before us a book that teems with the happiest solutions of the most difficult problems which science has in vain tried to combat. As the world is constituted today—by which we mean the stress, the storm, the exasperating energy of our people—the man or woman, who sees fit to launch a message that is not weighted down by esoteric abstractions but is characterized by the child-like simplicity of the tenets of Christian Science, is sure to win an audience. Though the science of medicine is an open book to him who brings the proper appreciation and understanding to bear on the subject, it is necessarily tightly closed to the uninitiated laity; and therefore is regarded by them with suspicion, if not as a pomptuarium which secretes in its innermost recesses, instruments and recipes specially devised to torture mankind. Granted that this contention is true, we must continue to despair of the enlightenment of the masses; and that our position in the matter is not untenable, the success of the mystagogues who flash meteorically across the horizon from generation to generation, readily shows. We have yet to see the time when a furor is not raised by the exhibition of a bone that has a saintly history, or the advocacy of methods which do away with surgical operations. But the etiolated author of "Science and Health" does not imitate the miracle-worker who, in a fine frenzy, exhorts his followers to believe implicitly, or be exorcised; she is, though, leading the sheltered life, too decidedly in touch with the drift of thought as it is expressed by the groundlings, not to know how best to propitiate them. Hence "Science and Health" with its wealth of superficial arguments that breathe the very spirit of self-complacent sciolism!

Haydon, on hearing of Keats's death, wrote: "For six weeks Keats was scarcely sober, and—to show what a man does to gratify his appetites when they get the better of him—once covered his tongue and throat as far as he could with cayenne pepper, in order to appreciate the delicious coldness of claret in all its glory," and we doubt if there is a medical man extant who can appreciate, to their fullest extent, the inanities of Mrs. Eddy's masterpiece, without a like artificial stimulation. For being inured, through his readings on medical subjects, to the best thought of the medical master-minds of the day, he surely must gasp at the two following quotations: "Health is not a condition of matter but of Mind; nor can the material senses bear reliable testimony on this subject * * * The divine Principle of Science, reversing the testimony of the physical senses, reveals man as harmoniously existent in Truth, which is the only basis of health; and thus Science * * * heals the sick," and "the daily ablutions of an infant are no more natural or necessary than would be the process of taking a fish out of water every day and covering it with dirt, in order to make it thrive more vigorously thereafter in its native element."

The latter excerpt, a plea for the continuance of dirt, reminds us of the happy thrust Charles Lamb dealt out to Martin Burney at a game of whist. "Martin," said the gentle humorist, "if dirt was trumps, what a hand you'd hold."

GENERAL CULTURE AND TECHNICAL KNOWLEDGE.

Quite recently the information has reached us that there seems now to be no special outward type for the medical practitioner, except possibly where he is found in sequestration in some remote rural district. This observation bears the hall-mark of verity as it emanates from no less a source than the Société de Sociologie of Paris. Whatever else this society may be doing, it is surely throwing much light on the professional types of France, and as the French have always been the leaders in art and fashion we may safely assume that what holds true there today will be the vogue among us tomorrow, that our manners and customs will stride on apace; but let us first discover whether or no we have not already arrived. A moment's consideration will show us that at least the younger members of our medical profession possess no outward distinguishing mark of their calling. We can see clearly that in the larger cities and towns, even in the country, the physician obeys the call of the social world about him; he is often a golf or tennis player, he may drive a motor car, in fact he takes part in the various avocations prevalent in his community on an equal footing with other men of his standing. Rare, indeed, is it to see today any remnant of the top-hat, long-tailed coat, and ready Latin or Greek platitude that so characterized the physician of a generation ago. Rarer still is it to find that attitude of aloofness, or that magic circle of mental superiority surrounding the physician which was formerly as natural for him to assume as it was, for him to flap his coat skirts with his hands behind his back.

The causes which have led to this breaking down of the older barriers of class are too complex and too various to be considered. We can but admit the statement as true that the doctor of medicine is at present much the same in appearance and behavior as is the lawyer, the professor, or the doctor of philosophy. All these gentlemen, even the clergyman, have more or less conformed to the general type so far as outward appearance goes. One or the other of them may be respected or feared for his mental attributes or for his behavior, but outwardly they are much the same, and have given over the practice of those grimaces of superiority that they were wont to assume when conversing with or appearing before their brother laymen.

Granting this to be true, let us consider the mentality of the physician as compared to the mentalities of his associates. de Tarde has compared the mind of the physician with that of the lawyer as follows: The physician, he says, believes in external and immutable truth while the lawyer admits only an internal and variable truth; that is, a psychologic truth. The lawyer being accustomed to controversial reasoning and to the relative truth of ideas, is ready to discuss and to argue, while the physician, looking up to absolute and external truth, yields to facts without discussing them. The physician gets this point of view from his scientific and technical training: a training which is characterized by its yielding submission to facts, and herein is a salient weak point, for before facts are blindly accepted they must be correlated, interpreted and from them correct deductions drawn.

The history of the development of medicine as a science is replete with examples of the error and hopeless degradation that follows the acceptance of rigid dogmatism and the building of creeds upon a theoretical conception based upon more or less correctly interpreted facts.

Though the physician has changed his outward appearance and has conformed to a general standard of behavior, we feel that his mind is still untrained in philosophic reasoning. We feel that as a class physicians are inclined to confound more or less hasty generalizations with facts and adhere to them blindly as to a religious belief. One has to but look about himself to see this process in operation, tinged at times with frankly admitted superstition and avowed ignorance.

The fault lies in medical instruction and we feel it is a fault that is growing greater rather than less. For, is not medical teaching becoming more strictly technical? Is there not a remarkable advancement towards specialization? We feel quite sure that the mentality of the physician suffers from a lack of general culture, from a narrowness of view, and from a blind adherence to what he regards as established fact.

Specialization demands a word. It is no longer possible for an individual to attain and hold encyclopedic knowledge. Nevertheless, we feel that the true aim of education, especially of medical education, is to give the power of understanding facts and ideas and arranging them logically according to their relative significance. What Liard wrote more than a decade ago seems especially to the point. "Specialization is becoming more and more of a necessity nowadays. It imposes the necessity for opening before the young mind—before the hour of inevitable specialization—the whole broad field of science if the individual is to be anything more than a mere machine. The young mind realizes better the dignity of the special work which it takes up later if it comprehends the relation it bears to the whole and to general knowledge."

Some one has said that there are three ways of looking at the world and that every individual adopts one of these ways predominantly. The first is the natural, the second the ethical and the third the poetic. One views the world as *thing*, one as *law* or *abstract intelligence*, and the third as *personality*. Of course, no one has one of these outlooks to the absolute exclusion of the other two, but it seems to us that the medical mind is inclined too much to view the world as a definite thing, losing all sense of relative values, and inclined to ignore entirely the point of view which attributes to facts a certain personality and flexibility.

The advance which has brought the medical man out of a distinct and remote sect similar to a priesthood, has worked wonders for his mind in the way of increasing his general culture. We feel that medical education must note this step in progress and must concede the necessity of producing a character of mind that will be able to assume in the future the dignified position which should be accorded to medical knowledge; and this means that steps must be taken to increase the general culture and to limit the tendency to strictly technical thinking on the part of the student of medicine.

THE MEDICAL TEMPER.

The spirit of the times, no longer content with the grosser problems of life, is displaying unwonted intellectual activity in connection with such abstruse subjects as the artistic and the scientific tempers. The literary weeklies have laid rather unloving hands on the weaknesses of the former while a number of medical journals, principally the British Medical, have been guilty of considerable emotional violence in discussing what, strange to say, must have been an unknown quantity to them before their criticisms appeared—the presence of certain flaws of a very human nature in the temper of the modern scientist.

The columns of our journal are happily exempt from any discussion of the irascibility and peevishness peculiar to artists, and as for the temper of the scientific sort, the medical journal above mentioned has expatiated on its vituperative and militant tendencies, until one would think that the pursuit of science was inimical to the proximate attainment of those models of calmness and serenity, which should have the greatest appeal for him who labors in behalf of mankind. These two tempers having received due attention on the part of discerning critics, it is meet that we should turn to the temper which concerns us most, namely, the medical.

Observations covering a goodly number of years, and the result of a view-point which we hope has always been inflexibly objective, with no ulterior thought of the personal equation, have brought us to the point

where by envisaging the subject in its entirety, illuminating deductions, as to the querulousness of the medical temper, have been reached. That the medical temper is frankly bourgeois is a truism that should call for no comment at this day. Its very essence proclaims it as such. But though the democracy of its complexion bears irrefragable testimony to its candor, its virility, its impeccability, the lack of a close association with intellectualism of a superior order, necessarily compels it, in circumstances which obtain only too frequently in the practice of medicine, to evince an over-sensitiveness, and to resent slight criticism or the fatuous attacks of weaklings, by a child-like garrulity.

While we are fully aware that as mundane affairs are arranged at present, doctors do not live in "the island-valley of Avilion; where falls not hail, or rain, or any snow, nor ever wind blows loudly," to fling down the gage just because a fellow-practitioner is critical or a small part of the public is inappreciative, indicates that the medical temper is too readily affected by the strenuous currents of modern life to approach that mental clarity which should make it a fortunate possession. It is a long story—the bickerings, the misunderstandings, the obvious conceits of the medical temper; and far be it from us to dwell here on the prodigious mass of jostling thoughts, on the part of the rank and file in medical circles, brought into play when well-known doctors gird at each other because a friendly criticism, which brushes the fulsome, has been the unsolicited meed of the earnest endeavors of a fellow-practitioner.

That the kind of temper here treated is the means of obstructing the channels through which medical thought flows in its onward march to the larger, mightier world-thought, should not be overlooked by those whose desire is the dignified elevation of the doctor and the proper dissemination of medical knowledge. The degree of the passions and vanities of human nature, at present dominant in the medical temper, should be lessened so that a milder note of tolerance, sympathy, and of duty towards the world, might be effected. And although it be true that, as George Eliot says, "prophecy is of all the mistakes we commit the most gratuitous," we cannot refrain from predicting that with less irritability, moodiness and crabbedness, the medical temper would stand for much in the thinking world; it would have a meaning, a value, a weight far greater than it enjoys today; and even the laity might be persuaded to judge it otherwise than through "the prism of whispered gossip." Then, and only then, will the imagination cease to boggle at the picture of its crudities and petty meannesses.

LITERARY NOTES.

That malaria has been instrumental in changing the face of history is expatiated upon by W. H. S. Jones, M. A., in his book, "Malaria: A Neglected Factor in the History of Greece and Rome" (Macmillan & Bowes, Cambridge, England). To subvert completely our college ideas of the history of Greece and Rome would indeed be too iconoclastic, but be it said in connection with this book that though on the face of it, the military heroes and their devastating armies lose some of their glory by comparison with the devastation effected by the ravages of malaria, a closer reading evinces the fact that this is not the author's purpose; his object being to show the hitherto unrecognized role malaria played, alongside the military heroes, in accomplishing the defeat of an enemy. The book is of especial interest to students of medical history.

Dr. Albert Deschamps is the author of an interesting work in three volumes, the first volume of which has recently been published at Paris. The title "*Les Maladies de l'Energie*" is in itself instructive enough to give the reader more than a mere inkling of the character of the book. In the first volume the author discusses general asthenia, exhaustion and mental and physical insufficiency. What adds a certain piquancy to the work is the fact that Dr. Deschamps himself was, during a long period of years, a sufferer from psycho-nervous disturbances, and the description of his ailment is a bit of autobiography very seldom found in medical literature. Since energy has so often been misdirected in this country, an appreciative reading of this work might be a lesson to those who foolishly waste, instead of conserve, their strength.

M. Amar, demonstrator of applied physics at the Paris Faculté de Médecine, has written a brochure on the highly interesting subject of inverted astigmatism as an anthropological factor. Inverted astigmatism, as is well-known, is exceedingly rare. Wecker and Javal, having observed a certain number of cases among the Jews, thought that this anomaly could perhaps be explained by the strange characters of Hebrew script, the letters of which are horizontal, instead of vertical, as in other writings. During a trip, covering some four months, through Italy, Sicily, Tunis and Algiers, M. Amar made by means of an ophthalmometer more than 1200 determinations of astigmatism, with results which showed that inverted astigmatism, though rare in the north of Italy, increases materially as one travels in a southerly direction. Starting at the African sea coast, the increase in inverted astigmatism was noticeable from east to west and attained the proportion of 50 per cent of every hundred subjects examined. This high percentage was found among the Arabs in Tunis and Algiers and not among the Jews. Moreover the

ancient works in Hebrew disclose the fact that the letters were vertical and not horizontal, so if there is any connection between Hebrew characters and astigmatism, one must conclude that inverted astigmatism is peculiar to the Jews of modern times.

The Oxford University Press (New York) has in active preparation a number of important works which should have a large circulation among American doctors. The most important from the point of research and thorough editorship is the System of Syphilis to be completed in five volumes. All the contributors of the articles rank high in medical literature and with our knowledge of the worth and value of the former literary undertakings of such men as Jonathan Hutchinson, Elie Metchnikoff, William Osler, D'Arcy Power, Pye Smith and Von Bloch, we can say without hesitancy that this work will bear the hallmark of an extraordinary performance.

In his book on the Russo-Japanese war, Dr. Matignon mentions many facts which illustrate the Japanese idea of propriety. Directly the Japanese installed themselves in a village the first need was the bath; to further this end, channels were dug through which running water was allowed to course. The precautionary measure of embankments was not overlooked, and sentinels were stationed to prevent pollution by the admixture of extraneous matter. On the outskirts of the village latrines were erected for the natives; and proclamations issued by the commanders compelled their use. These military proclamations were indispensable as many villages in Korea and Manchuria were very filthy. Human excrement was thrown into the streets, for the idea seemed prevalent that a street was its proper receptacle. So much for economy and laziness.

In the first campaign against China, in 1895, the Japanese attempted to remedy the filthy habits of the Koreans. In the streets of Seoul they erected small buildings to be used by the public, the signs in Chinese and Korean proclaiming their object. The delinquents who violated the stringent rules laid down by the Japanese, were beaten with the butt-end of a gun and were immediately put to work as scavengers of their own filth. This method of reform, though apparently brutal, was most efficacious; and when some two years after the author visited Seoul, there were still indications of the civilizing work of the intelligent Japanese.

ORIGINAL ARTICLES.

TECHNICAL METHODS OF PERFORMING CERTAIN
CRANIAL OPERATIONS.*

By HARVEY CUSHING, M. D., of Baltimore.

I purpose on this occasion to limit my remarks largely to a description of such technical methods as have come to be more or less habitual with me in the routine performance of the simpler operations of craniotomy and craniectomy—in other words, of operations in which a portion of the skull is but temporarily displaced, usually for the primary object of intracranial exploration, and those in which it is intentionally and permanently removed, usually for purposes of cerebral decompression.

Many of the views to be expressed are purely personal ones and are given with the full realization that the details of preparation and procedure which prove satisfactory to one may be entirely unsuited to the operative requirements of another.

STEPS OF AN OSTEOPLASTIC RESECTION.

General Preparation. It is, I believe, a fairly universal custom to have the patient's head shaved and treated antiseptically in the ward on the day before the operation—some even advocate a double preparation of this kind. This I consider an unnecessary precaution, if not positively unwise; for the patient is apt to pass an uncomfortable night and, even with the most expert shaving, the scalp is likely to be a little "sore" the morning of operation. In something over 350 craniotomies I have never seen an infection, even a superficial stitch abscess, and have ceased to regard the chance of sepsis as a possible complication of these operations.

It is our custom, without previous ward preparation, to have the hair clipped and shaved just before the operation—a duty incumbent upon the surgeon himself in the case of a child or a nervous patient. After a double shaving there may be a preliminary cleansing of the scalp with green soap and a soft brush. The final preparation is deferred until after administering the anæsthetic.

Position on the Table. It is a great advantage, though I believe not a common practice, to place the patient on the table in the position most favorable for the operation before inducing narcosis. This not only shortens the time as well as the depth of anæsthetization, but it also insures the patient's being in a comfortable posture and thus obviates in large measure the strain leading to backache and like discomforts, which an awkward position and the handling of a relaxed patient engenders. It is particularly important to observe this rule in case the cerebellum or occipital lobes are to be exposed.

*Extracts from an Address before the St. Louis Surgical Society, December 16th, 1907. To appear in *Surgery, Gynecology and Obstetrics* for March, 1908.

For the usual operations on the vault, small, flat, solid pillows or sand-bags suffice to turn and hold the head in the desired position; on the other hand, I regard a head extension with shoulder supports as essential for occipital work, chiefly to insure free respiration.

The Anaesthetic. Regardless of the drug to be employed it is essential that it be administered by an expert—preferably by one who makes this his specialty. Many of the conditions for which these operations are attempted are associated with cardiovascular and respiratory disturbances of cerebral origin, and the greatest care must be exercised lest there be a further burden due to the anæsthetic. In all serious or questionable cases the patient's pulse and blood-pressure, their usual rate and level having been previously taken under normal ward conditions, should be followed throughout the entire procedure and the observations recorded on a plotted chart. Only in this way can we gain any idea of physiological disturbances—whether given manipulations are leading to shock, whether there is a fall of blood-pressure from loss of blood, whether the slowed pulse is due to compression and so on.

Sir Victor Horsley, as is well known, is a strong champion of a chloroform-oxygen combination. He emphasizes that only a small amount of the drug is required, except during the early and closing periods of the operation, and that there is less likelihood of vomiting than with ether. The drug is taken smoothly without cyanosis and, furthermore, tends to lower the blood pressure; hence there is said to be less bleeding during the operation.

In this country, where chloroform is doubtless administered less well than ether, the latter is the anæsthetic of choice at most hands, the primary stage usually being induced with ethyl chloride. Kocher believes that there is an element of risk in the lowered blood-pressure under chloroform, and it is perhaps debatable whether this is not a more certain danger than the somewhat greater loss of blood under ether—a drug which tends to hold the blood-pressure high.

The question of the anæsthetic in a two-stage operation is an especially serious one, and under these circumstances the dangers from chloroform would possibly be less than those of a repeated etherization.

Preparation of the Operative Field. With the patient anæsthetized and in the proper position on the table the final cleansing is done; for this alcohol and 1 to 1000 bichloride solution are sufficient.

It is my practice at this stage, before the landmarks are obscured by the covering of operative sheets and towels, to outline the proposed incision on the scalp by a superficial scratch with the scalpel. Those who have by long practice familiarized themselves with the rules of cranio-cerebral topography learn to visualize the main fissures with no greater margin of error than when measurements are employed. Furthermore as a large opening is to be made, an attempt to accurately determine on the scalp the point overlying a given center is today less essential than formerly when attempts were made to approach it directly by a small overlying trephine opening.

With the proposed flap thus outlined and the head raised by a hand placed under the back of the neck, a broad square of wet bichloride gauze is thrown over the entire head; over this in turn is placed a *tourniquet*.

For the control of haemorrhage from the scalp numerous forms of tourniquet have been advocated. Many use a simple rubber tube or Esmark bandage, both of which are difficult to apply and to fasten without slips in the aseptic technique. I have finally come to a form of rubber ring in which is inserted a buckle (Fig. 1) so that the tube can be made into a circle of any size and can be easily removed at the end of the operation. Practice enables one, with a given quality of tubing, to



FIG. 1.—Author's form of adjustable cranial tourniquet, with tapes applied.

estimate the size of the ring necessary in a given case to shut off arterial supply from the scalp without causing undue pressure. The ring, furthermore, is provided with a median tape whose length—measured after the head is shaved—should equal the distance from glabella to inion, and the object of which is to prevent the ring from rolling over the orbits, as it is likely to do if there is a prominent forehead. Having been boiled the ring is applied by the operator and an assistant, being snapped over the head from occipital to frontal regions (Fig. 2).

In the majority of cases all bleeding from the scalp is thus controlled though in certain patients in whom there is marked intracranial stasis



FIG. 2.—Showing tourniquet in act of application; held by assistant in suboccipital region while the ring is slipped over the brow.

some of the veins on the concave side of the incision which receive blood through emissary vessels from within the skull may have to be clamped.

Around and just above the tourniquet a small towel folded lengthwise and wet in bichloride is tightly pinned, and to this is securely fastened



FIGS. 3-4.—Showing final preparation of operative field, with hood for anesthetist.

the large sheet which covers the etherizer like a tent and leaves exposed little more than the area outlined by the preliminary incision (Figs. 3 and 4). If there is any likelihood of the slipping of these surrounding sheets they may even be pinned directly into the scalp.

Such details of preparation are of especial importance, I believe, in operations whose approach lies toward the base of the skull; for example, in the suboccipital or temporal operations to be described. In those situations away from the vault the use of a tourniquet is, of course, impracticable, and as the operations may be prolonged, as in Gasserian ganglion work or in the exposure of lateral recess tumors, it is essential that the exposed skin-field, which may be only a few square inches in size, should be securely isolated from its questionably clean neighborhood.

The Osteoplastic Flap. With the operative field thus prepared the incision is carried down to the skull through gauze and soft parts, in the line previously scratched on the scalp. When the bone has been exposed it can be opened in a number of different ways.

It may be recalled that in the original operation described by Wagner the flap was outlined with mallet and chisel: Chipault, Keen, Küster and others have followed his lead. Most operators object to these methods on the score of possible concussion, even from the glancing blows which are given.

Toison, in 1891, suggested dividing the bone with a chain saw passed between primary trephine openings, so that *the cut should be made from within outward*, and this remains, I think, a first principle. Obalinski, in 1897, recommended for this purpose the flexible wire saw introduced by Gigli in the same year for obstetrical purposes.

Similarly the bone may be cut between the primary openings by sawing with a straight hand-saw from without inward. Special craniotomes, which cut in a circular fashion by swinging the blade about a fixed point, have been devised. The Stellwagen instrument has been highly praised by Philadelphia surgeons; a French tool of similar type was described by Codivilla in 1900. Though no preliminary trephine opening is needed these methods likewise possess the disadvantage of cutting from without inward, and as there is no guard the dura is likely to be injured by such *craniotomes à mouvement circulaire*.

Further, a linear cut from 2 to 3 mm. wide, of the full thickness of the bone, may be made with biting forceps of the Montenovesi or of the Dahlgren and De Vilbiss pattern. These instruments progress slowly, but they have the advantage of biting outward, so that there is little, if any, jar to the brain.

The electromotor has been employed to furnish the driving power for a number of instruments which possess a circular or spherical form and so can revolve, such as burrs, trephines and circular saws, of which there are many patterns, and it has led to the invention of a revolving tool with spiral cutting edges which is used by some operators. Cryer, in 1898, Sudeck, in 1900, and Sykes have all described instruments of this latter type, and while they are useful for certain purposes they

possess the disadvantage for osteoplastic work of cutting such a wide slot that when used for the entire incision the replaced flap subsequently rests on the dura instead of on the bone edges.

In the Doyen type of motor there is a long flexible arm between the motor and the revolving tool, which is thus driven from a distance as in the usual form of dental engine. Borchardt (1906) has made some desirable modifications of this apparatus and Bercut (1904) and Hartley (1907) have added the great improvement of having a cutting tool directly connected with the motor, which, weighing only 8 or 9 pounds and being capable of sterilization, is itself held in the operator's hands.

Surgeons who use electromotive force for osteoplastic operations are able to work very rapidly, and if this does not mean added risk of accident it is most desirable. I have clung nevertheless to the somewhat slower but certainly less dangerous operation by hand-driven instruments,



FIG. 5.—Crown of beveled trephine with loose central pin, having thumb piece to prevent its dropping out unless desired.

following a "combined method," which makes use of the following general principles: (1) Division of the bone between two or more primary openings; (2) incision by an advancing instrument from a single opening; (3) the making of all cuts from within outward; (4) the leaving of a beveled flap.

A primary opening through the thickest part of the exposed cranium, usually near the parietal eminence, is made with a hand-trephine (Fig. 5), which should be of generous size with a crown of fully 2 cm. I prefer a trephine of the Galt conical pattern with a beveled edge. Bleeding from diploetic vessels, if severe, may be controlled by the proper use of Horsley's wax.

One or more secondary openings (one is usually sufficient) at the upper edge of the incision are made with a Doyen perforator followed by a burr (Fig. 6). Then with a long-handled blunt dissector or dural



FIG. 6.—Doyen burr in use during operation.

separator introduced through the large trephine opening, the dura between these openings is freed from its bony attachments. On withdrawing the dissector the intradural pressure usually suffices to press dura against bone again and thus to check dural bleeding if any has occurred.

From the two trephine openings the lateral edges of the flap are then cut downward toward the base in line with the skin incision. The first half inch of these lateral cuts is made with Montenovesi forceps which leave a 3 mm. incision, followed by the weaker Dahlgren forceps (Fig. 7) as the thinner bone near the temporal region is approached.



FIG. 7.—Dahlgren forceps used for incision of lateral edges of bone flap when approaching thinner portion of skull in temporal region.



FIG. 8.—Showing Gigli wire saw in use for making beveled mesial edge of flap, with dural guard introduced through the two cranial openings.

A Gigli wire saw is then passed on a guide between the two openings, and the mesial edge of the flap is cut (Figs. 8 and 9) on a broad bevel



FIG. 9.—Showing Gigli saw stage of actual operation. Note dryness of field owing to properly applied tourniquet.

to enable its subsequent solid replacement without danger of its being driven inward by a snug pressure bandage. The flap is forced back by the insertion of blunt instruments around the edges and is broken across at its base.

As Hartley and Kenyon have emphasized, all flaps made on the cranial vault should radiate toward the temporal wing as a base, since this is the thinnest part of the calvarium, is most easily broken, and its covering of scalp is well nourished by the temporal vessels.

Bleeding from the expansions of the lateral sinus, in case they have been exposed by a high flap, is best controlled by the pressure of sterile absorbent cotton, pledgets of which I find to be as valuable for hæmodynamic purposes in the intracranial part of the work, as is wax for the bone itself.

The Intracranial Procedure. At this stage, with dura exposed, if there has been a fall of arterial tension from loss of blood, the further



FIG. 10.—Osteoplastic flap and dura reflected. Note concentric rather than superimposed openings through scalp, cranium and dura; also broad bevel of upper edge of bore incision.

progress of the operation, especially in tumor cases, may well be postponed for a second session. If there is no contraindication on this score the membrane is opened in a line concentric with the bone incision (Fig. 10), leaving plenty of margin for subsequent suture. The membrane should be incised on a grooved director, especially if there is increased tension, for it is important to avoid any possible injury to the pia-arachnoid. In case the tension is so great as to threaten this, a lumbar puncture should be performed at this stage of the procedure.

The dural incision should not be made too near the median line, lest the edge of the parasinoidal expansions or the veins entering them be injured. If the mesial edge of the hemisphere is to be exposed it is best

to open the dura in this direction by a separate radial cut, and, if necessary, to rongeur away some of the bone toward the median line. This is preferable to an attempt at exposure of the mesial edge (foot area) through the primary osteoplastic flap—a procedure usually attended with great loss of blood.

If an incision of the cortex is necessary, whether for exploration, for extirpation of a given area in cases of focal epilepsy, or for the removal of brain tumors, the cortical vessels whose division will be necessary must first be ligated on each side of the proposed incision, which should, if possible, be confined to the exposed surface of a convolution and should not cross a sulcus. The finest strands of split silk, preferably black, should be used for these ligatures and they should be passed around the vessels with delicate curved French needles which are introduced and emerge in non-vascular areas. With these precautions the sub-cortical manipulations can usually be conducted with but little loss of blood even in most cases of tumor extirpation. Tumors which have approached and involve the cortex must be surrounded by a similarly placed double row of ligatures, between which the incision is made. Subsequent dissections are carried out with blunt instruments, and momentary pressure of cotton pledgets will usually check the oozing.

A brain which tends to protrude may sometimes be “dropped back” by elevation of the head and trunk or by evacuating cerebrospinal fluid. This can at times be accomplished by pricking the exposed arachnoid spaces and by milking out the fluid; at other times a lumbar puncture may be necessary, and the removal of fluid in this way during the course of an operation is of the greatest possible help under many circumstances and is free from the danger which attends a similar proceeding when the skull is closed and when there is intracranial pressure from tumor. In a number of cases in which tension was great and in which thorough exploration—as of the occipital pole, calcarine region or temporal base—was undertaken the needle has been allowed to remain in place during the entire operation. It is a new principle, I think, and has proven of great aid to me on several occasions.

Closure. Unless there is reason for permanent decompression, owing to an undisclosed, an inaccessible or an irremovable lesion, an accurate approximation of the dura in its two layers is desirable. It should painstakingly be made in order to prevent the formation of adhesions, or their reformation if they have been found and divided as the presumed source of irritative symptoms, particularly in certain cases of epilepsy. If a large cerebral defect remains after the removal of a growth, or if the brain has receded from its normal level, owing to evacuation of cerebro-spinal fluid, the space may be filled with warm salt solution before closing the dura and restoring the osteoplastic covering.

The bone flap is solidly replaced and the scalp is in turn accurately approximated in a broad surface. It is well to draw together the galea aponeurotica by a few buried sutures before closing the outer layer. For the latter many use a continuous suture, which has the advantage of speed. Inasmuch as the closure is completed before removal of the

tourniquet I feel the need of a most accurate and solid approximation, which is accomplished by placing about the incision a series of straight, round-pointed cambric needles which serve to keep the edges everted as each suture is tied. This assures a ridge of tissue with a flat apposition, which prevents subsequent bleeding from the vessels of the scalp (Fig. 11).

Drainage is occasionally necessitated—perhaps in 20 per cent. of the cases—by oozing from the surface of the dura; but it should be avoided if possible. When used, the drains are led out, not through the original incision, but through puncture wounds made in the scalp about 2 cm. to its outer side, insuring for the drain an oblique passage which can be occluded by pressure.



FIG. 11.—Showing method of closure of wound before removal of tourniquet. Note ridge of tissue made by ligatures, which when tied and locked to the side should prevent all subsequent bleeding from the scalp.

The wound is partly dressed and pressure exerted before slipping off the tourniquet; then an abundant dressing with an outer starched bandage is applied. The ears should be carefully protected with cotton to prevent discomfort from pressure.

The first dressing is made in forty-eight hours, when the drains, if used, and all the sutures are removed.

The method of temporary cranial resection was devised to obviate a subsequent defect in the scalp, and though I do not believe that even large cranial defects are necessarily harmful, they are certainly undesirable (particularly in unprotected situations and in the presence of increased intracranial tension) if a satisfactory exploration is possible without leaving them. The accessibility and removability of a cerebral tumor can rarely be determined before the hemisphere is exposed. If

the tumor can be removed it is always desirable to restore the cranial wall; if it cannot be removed it is necessary to leave an opening, but the situation of this defect must be carefully chosen.

I have tried in various ways to circumvent the difficulties which often-times arise and to decide upon the best course of procedure in individual cases. In some a primary decompressive operation has been made under the temporal muscle—preferably upon the same side as the expected lesion—and the more serious exploratory operation deferred for a subsequent sitting or sittings. Indeed, in lesions of obscure situation this is always desirable, but I refer more particularly to lesions which have produced more or less definite focal symptoms. In some cases I have carried out a combined osteoplastic and decompressive operation, the thin portion of the temporal bone being rongeured away through the osteoplastic window, not only on the flap side but also well down to the base of the skull opposite to it—in other words, most of the bone, as in the usual subtemporal decompressive operations, is removed from under the temporal muscle while the rest of the bone-flap underlying scalp alone is replaced.

In this way a marked protrusion may be prevented. Experience has taught us much in regard to two things: (1) *The principle of cerebral dislocation* permissible in the presence of a large cranial and dural opening and of great importance in explorations; and (2) *the danger of decompression directly over a vascular growth*. The latter I think is not fully appreciated, for many surgeons who have written on the subject advocate decompression, if possible, directly over a tumor—a proceeding which often leads to a large hernia if scalp alone covers the growth, and which may be the occasion of hæmorrhage into a vascular growth owing to its change of position from protrusion through a defect.

OPERATIONS WITH REMOVAL OF BONE.

I have thus far in the main considered only those forms of craniotomy in which a flap has been made and then replaced. There remains a large number of operations—craniectomies—in which it is either impossible or inadvisable to attempt an osteoplastic resection.

Subtemporal Operations. Many of these operations are characterized by the removal of more or less of the thin cranial wall underlying the temporal muscle, whether they are conducted for purposes of exploration, usually in traumatic cases; for purposes of decompression, in states of increased intracranial tension such as those associated with tumor; for the removal of growths or natural structures like the Gasserian ganglion lying in the mid-cerebral fossa or even for the still deeper exposure of the third ventricle or the pituitary body. Not only is it difficult in this situation to make a satisfactory osteoplastic flap, but the precaution is unnecessary if proper use is made of the temporal muscle, fascia and galea in the closure.

In all of these operations, with a perfect technique and abundant experience in the proper disposition of gauze, towels and sheets, a small portion only of the head need be shaved (Figs. 12-13).

The steps of a subtemporal craniectomy differ somewhat, particularly in the manner of approach through the temporal muscle, according to the nature of the case, whether (1) a ganglion operation, (2) a decompression for tumor, or (3) an exploration in cases of cranial trauma.

1. In the *Ganglion Operation*. Here the muscle fibres must be divided and scraped away from the bone well down to the base of the temporal fossa in order, after making the small cranial opening, to give direct



FIGS. 12-13.—Photographs taken three weeks after decompressive operation with curvilinear scalp incision for pressure symptoms due to the edema of nephritis. Note partial shaving of head, allowing patient to conceal shaved area by parting hair on opposite side.

access to the base of the mid-cranial fossa without undue elevation of the temporal lobe.*

The small curvilinear skin incision, entirely within the hair margin, should be placed so as to avoid division of the upper branch of the facial nerve which innervates the occipito-frontalis muscle (pars frontalis). The muscle itself should be divided in horseshoe-shaped fashion, as in the older operation, and scraped away from the bone so as to bare the lower part of the fossa. I still think it is essential, for more

*At the present writing I have performed sixty-eight of these operations and have ceased to regard them as particularly difficult—no more difficult, indeed, than many of the extracranial operations which are advocated and which give no certainty of permanent relief in cases of major neuralgia. Two of my early patients I lost through inexperience; in the last forty there have been no complications of any sort.

reasons than one, to remove the zygomatic arch, and this can be done by crowding forward the periosteum and fascia from the point at the temporal attachment of the zygoma where it is crossed by the incision, without risk of injuring the aforementioned twig of the N. facialis.

If the soft parts are painstakingly closed in layers—muscle, fascia, galea and skin—there will be no apparent depression in consequence of atrophy of the muscle. A drain is rarely needed. Without tests for sensation it should be impossible to tell subsequently, by inspection alone, upon which side the neurectomy has been performed.

2. *The Subtemporal Decompression for Symptoms of Increased Intracranial Tension.* Here I think it is wise to make a curvilinear skin incision which is more or less concentric with the temporal ridge or line of attachment of the temporal muscle (Fig. 12). A flap of scalp alone should be reflected, with careful preservation of the stout galea-aponeurotica, which in turn should be incised and reflected, laying bare the temporal fascia. This fascia is then incised in line with its fibres at about the middle of the muscle. While the edges of the split muscle are carefully held apart, its attachments, together with the pericranium, are separated by an elevator from the bone under the entire muscle belly.

The bone is then entered in any way desired—I prefer a Doyen perforator and burr, followed by Montenovesi forceps and then by Horsley rongeurs as the opening is enlarged. The chief difficulties lie in the fact that the muscle cannot be elevated far from the skull without tearing it—an undesirable accident in view of the subsequent closure. Hence it is necessary to have a special form of retractor as well as flat-bladed rongeurs which can be introduced far under the muscle and which will bite away the thin plates of bone without jar. Care must be taken to avoid cerebral contusion by rough manipulations with the rongeur forceps.

A generous area of bone having been removed, it remains to slit the dura in stellate fashion to the edge of the opening. In cases of great tension this is often a difficult thing to accomplish without injuring the pia-arachnoid—an accident which may lead to very undesirable consequences. One can usually estimate the degree of tension by palpation, but if this is not conclusive a very small entering incision is made. If the brain tends to forcibly protrude, especially if it is dry and there is no escape of fluid with resultant lowering of tension, a lumbar puncture should be performed in order to accomplish this end.

A dangerous, at times fatal, procedure, as I have often reiterated, when the cranium remains closed and cerebral tension is great, lumbar puncture and withdrawal of the cerebrospinal fluid from below loses its hazardous features after the cranium has been opened. In these cases it is often of the greatest aid, for the tension usually recedes sufficiently to allow the free opening of the dura without risk of injury to the leptomeninges and cortex. In more than half of my subtemporal decompression cases for tumor—now nearly sixty in number—this measure has been resorted to at this stage of the operation.

In this operation again the wound is painstakingly closed in four layers—muscle, fascia, galea and skin. There is more or less protrusion under the closed muscle in these cases, though never a large hernia such as one sees in cases of decompression protected by scalp alone. Even should there be a particularly tense cerebrum there is little risk of the wound reopening owing to pressure if there has been a secure closure with careful approximation of muscle and fascia.

In the long run, for all cases of inoperable or inaccessible cerebral tumors this, in my experience, has proved to be the most satisfactory method of decompression, as shown not only by the lessening of discomforts, but by the most delicate of tests, the condition of the eye-grounds. There is one group of cases, however, which is an exception and does not receive much benefit from temporal decompression alone—namely, those in which the condition is complicated by a hydrocephalus ventriculorum, due most often to closure of the iter by pressure of sub-tentorial growths.

Not only for tumor, but for other conditions of tension, will a sub-temporal decompression prove to be often a helpful, sometimes a life-saving measure. Among these conditions may be mentioned thrombosis or embolism; intracranial syphilis—for the cessation of headaches and vomiting enables a subsequent antiluetic régime to be much more efficaciously carried out after the decompression; and many forms of oedema, more particularly in acute serous meningitis and in the oedema of nephritis. Of the latter I have had one remarkable case (Figs. 12-13)—a young woman, in a profound uræmic state, not benefited by numerous lumbar punctures, who regained consciousness after the operation and left the hospital better than she had been for many months, practically free from headaches and vomiting and with an extraordinary improvement in, though not a complete subsidence of, her so-called “albuminuric retinitis.”

3. *The Temporal Exploration in Traumatic Cases.* Particularly in bursting fractures of the skull with general pressure symptoms and no external indication of the character and situation of the cerebral lesion, no site for an exploration is so likely to disclose the seat of trouble as one in the temporal region, and no form of operation is so likely to meet the needs of the conditions found as the “split-muscle” operation with removal of bone.

As drainage is often indicated in these cases I prefer to make the skin incision parallel to the line of muscle fibres, there being less need here for a protecting flap of scalp, since the pressure of the traumatic oedema is an acute process which subsides in the course of a few days. Otherwise the operative approach to the lesion is similar to that in the tumor cases.

Suboccipital Operations. For the exposure of sub-tentorial lesions—tumors of cerebellum or of the lateral recess, a basilar meningitis to be drained, the freeing of adhesions about the fourth ventricle resultant to an old inflammation, etc.—the principles of tourniquet and bone-flap are inapplicable, just as in operations conducted through the temporal



FIG. 14.—Showing table with outrigger for shoulder supports and crutch for head, for use in suboccipital and high spinal operations.

region. In this situation also, owing to the possibility of subsequent firm closure under muscle, there is little reason for preservation of bone.

Though many surgeons place the patient on the side for these operations I much prefer a symmetrical face-down position, particularly since I regard a bilateral exposure as desirable in all cases. This posture interferes greatly with respiration unless the shoulders are held away from the table to allow of free costal movements, and consequently a table outrigger has been devised for these cases, possessing shoulder supports and a separate crutch having a horseshoe-shaped top in which



FIG. 15.—Same as Fig. 14, with subject in position.

the head comfortably rests (Figs. 14-15). The anæsthetic is sprayed against a mask attached under the "horseshoe."

In order to fully benefit from the "principle of dislocation" mentioned under osteoplastic operations, a bilateral exposure of both cerebellar lobes is desirable, to allow of the outward dislocation of the lobe on the opposite side during the manipulations of the other. This will permit of sufficient displacement to freely expose a cerebello-pontine tumor, for example, without the necessity of excising cerebellar tissue or, indeed, of injuring it in any way. For this symmetrical approach I find that it is desirable to make a median incision which divides the soft parts not only down to the occiput, but to the spinous processes of the upper cervical vertebræ, in addition to the usual curvilinear cut over the occipital ridge. This "cross-bow incision" gives an exceptional view, owing to the possible lateral reflection of the flaps.

Primary openings having been made in the bone thus laid bare they are enlarged with rongeurs, upward, so as to expose the lateral sinuses, across the median line, and then downward so as to include the posterior half of the foramen magnum. The dura is then widely opened and the mid-occipital sinus, if present, is ligated.

This opening, through the possibility of cerebellar dislocation, gives a wide area of exposure, either of the fourth ventricle or of the structures in the cerebello-pontine angle, and is desirable not only for exploration, but for decompression of irremovable tumors in this situation.

Although there is evidence at the present day of a certain rebirth or reawakening of interest in matters relating to neurological surgery, there can be no doubt but that, owing to the need not only of particular technical training, but also of wide neurological experience, the advances for the time being must continue to be made largely at the hands of those who choose to devote themselves to this and to exclude themselves from other fields of operative work. The day will doubtless come, as has been the case with all surgical specialties, when matters of operative therapy will be put upon a sound basis for certain conditions and will be shown to be futile in others; and when this time comes then may the general surgeon properly and safely undertake to carry out in routine these difficult and responsible measures and to include them among his numerous daily operations.

In the meantime there is much to be learned in regard to the cerebrospinal fluid circulation before the treatment of cerebrospinal infections or of acquired and chronic hydrocephalus can be dealt with; much to be learned in regard to intracranial pressure before we can finally determine the best method of decompression for inaccessible tumors, for the oedema of uremia, the swelling associated with cerebral softening, with encephalitis, with the so-called meningitis serosa, etc.; in regard to cerebral hæmorrhages before we can finally come to remove apoplectic clots as safely as we can those from the meningeal spaces; and in regard to many other of the diverse problems which come before the operating neurologist.

THE SCIENTIFIC RELATION BETWEEN THE HUMANS AND NON-HUMANS.

By JOSIAH OLDFIELD, M. A., D. C. L. (Oxon.), M. R. C. S., L. R. C. P.
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At the International Medical Congress held in 1881, under the presidency of Sir James Paget, when the leaders of the medical profession of all civilized countries were assembled, the following resolution was passed:

"That this Congress records its conviction that experiments on living animals have proved of the utmost service to medicine in the past, and are indispensable to its future progress. That accordingly while strongly deprecating the infliction of unnecessary pain, it is of opinion, alike in the interests of man and of animals, that it is not desirable to restrict competent persons in the performance of such experiments."

This resolution seems distinctly to assert the inherent right of the non-human races to be exempted from the infliction of pain upon them by the human races, and that when this right is infringed, it must be demonstrated to be necessary on the ground of utility to both classes, that only so far as its utility can be demonstrated is the infliction of pain by the human on the non-human permissible.

In attempting to frame an academic scientific resolution at the Church Congress at Folkestone in 1892, Dr. Samuel Wilkes, consulting physician to Guy's Hospital, suggested that the position of the Congress should be expressed as follows:

"Seeing that the amount of suffering to animals is very great in supplying the wants of man, and therefore worthy of the consideration of the Congress, but hearing that the pain inflicted on them by experimentation for scientific inquiry is comparatively small, and also hearing from those who are alone competent to judge, that the knowledge thus obtained is eminently useful, we cannot as a body declare our disapproval of the so-called vivisection."

This resolution again acknowledges utility as a basis for the infliction of pain, but further brings in the position that the infliction of pain upon one ground of utility has some weight in determining the infliction of a lesser pain upon another ground of utility. We inflict a greater pain in butchery, therefore we may rightly inflict a lesser pain in vivisection.

Again Dr. Wilkes, in his paper on the same occasion, said that he considered that the scientific position of the human to the non-human is that the human "ought to be kind and not cruel to animals," but he further laid down his opinion that "right means might," and in support of his position maintains that:

"Animals are so constructed as to seize and devour those creatures which are more helpless than themselves * * * and so perpetual warfare goes on * * * As these are sensitive creatures, it does not want much imagination to picture to one's self the amount of suffering which must always be prevailing amongst these tortured creatures in every forest in

the world. * * * Man is an animal constructed like other animals with all their appetites and instincts * * * he pursues other creatures to kill and eat them, he also rejoices in the pursuit; so much so, that when not requiring them for food he still hunts and shoots them for pure enjoyment. * * * If man wants food he employs another man to fell an ox or cut the throat of a sheep * * * On account of the slaughtering of the seals for the sake of their skins * * * the pictures of hundreds of these warm-blooded animals being harpooned and writhing in their gore, mothers and young in heaps together was not pleasant to contemplate. But should a rich lady, not caring to dress like ordinary persons, wish for finer raiment, she deposes some one to go and acquire the warmest and finest skins and says 'strip it of its skin and I will handsomely repay you!' 'I have never,' says Dr. Wilkes, 'yet heard of a hint being given as to an animal having a right to its own skin, or even any compunctions of conscience on the part of the lady who has deprived him of it.' * * * Sometimes we eat our victims alive, previously putting a little pepper and vinegar on the writhing oyster before we swallow him. Then, for the sake of modesty, we usually pass over the gigantic amount of mutilation going on in the unsexing of animals so as to render them mere masses of fat beef and mutton for our own eating. * * * All these things we approve, or certainly do not condemn, and therefore I suppose they are strictly correct, but if so, it is nothing less than ridiculous to speak of the rights of animals."

The views, therefore, of scientific bodies of men and scientists upon the rights of the human to inflict pain upon the non-human race seems to be summed up in five arguments:

1. *The scientific view of life is not creation, but evolution*, and throughout the whole scale of evolution we find that the stronger preys upon the weaker and inflicts pain upon the weaker. Man, therefore, is only acting in harmony with the laws of his environment by preying upon all the non-human races and inflicting pain upon them at his own discretion. He is not bound to consider them in any way. The scientific conception of life is based upon the observation that every unit must progress at the expense of its fellow units, and the fittest alone will survive in the internecine unceasing struggle.

2. *Knowledge is the ultimate*, and, therefore, in his search for knowledge, the right of animals to life, liberty or freedom from pain vanishes. Man may, out of a supererogatory benevolence, take the trouble to minimize pain in the pursuit of his knowledge, but there is no scientific reason why he should do so.

3. The utilitarian theory of Bentham and the greatest happiness to the greatest number argument, when translated into the scientific field, may be stated in the terms that *when it is for the good of a life of higher evolution, a life of lower evolution should be sacrificed*, and that in calculating numbers in order to provide the greatest happiness for the greatest number you must take value into consideration also—a human life of high evolution is worth many sparrows of a lower development.

4. Since no sane person denies *the right of men to use the flesh of animals for food*, and their skin for his covering, and their strength and beauty for his comfort and pleasure and sport, and since this entails untold suffering upon the inarticulate races, it is illogical to deny man *the right to use animals for the purpose of experimentation*, or for any other object that scientific research may require.

5. *Animals may be specially bred for the purpose of performing experiment* or otherwise inflicting pain upon them at the will of men, and in such case the pleasure of living far outweighs the pain of torture, and man has, therefore, actually become their benefactor by breeding them for the purpose of torturing them. In shortly criticizing these five arguments I should like to point out the following general facts, which should not be overlooked:

(a) *To the scientist a man is really and truly an animal.* To the physiologist the difference between a human and an anthropoid ape is not one of essentials, but one of details, and the differences between an anthropoid and an invertebrate are far more characteristic and deep-seated than those which differentiate the human from the anthropoid. The presence or absence of chlorophyll may be a fairly constant standard by which one class of vegetable life may be separated from all animal life. The presence or absence of cellulose cell envelopes may be the great line of cleavage between the animal and the vegetable. The presence or absence of a notochord may be a permanent test to differentiate vertebrate from invertebrate, but where is the line which on physiologic grounds, separates humans from non-humans? The skeleton reveals none to the anatomist, the processes of assimilation and the methods of progression reveal none such to the biologist. The method of protective powers of the phagocytes to the invasion of disease and the ravages of alien micro-organisms reveal none such to the pathologist. The constituents of which bone and muscle and brain are composed are the same in humans and non-humans, and their analysis reveals no such difference to the chemist. The methods of reproduction and all that majestic mystery which surrounds the origin of new life, the union of cells, the germinal vesicle, and the great wonders of karyokinesis reveal no essential difference to the embryologist between the human and the non-human animal. Even the details are not of comparatively overwhelming importance, a rather larger brain and some deeper furrows in it sum up the chief details of difference between the tremendously vaunted human and the despised non-human. In the eyes of science man is an animal.

(b) *Pain is ever pain.* Whether I irritate a sensory nerve in a guinea pig or in a man the result is the same in kind. The scientific definition of pain knows no essential distinction between pain felt by a human and a non-human. With regard to degree, we have as yet no angiometer to measure pain, so that we cannot speak with exactitude; but observation of the way in which some men inured to rough life and exposure bear operations on sensitive parts and say that it doesn't hurt much; observation of the way in which races like the red Indians inflict

pain on themselves and on one another; observation of the agonized sensibility of some breeds of dogs to cold, neglect and harsh treatment, leads one to believe that when we do get an angiometer invented, it will show that some animals feel as much pain as some men, and that while some men hardly feel pain at all, some animals are acutely sensitive to it.

Any one who has kept a highly sensitive breed of dogs will bear me out when I say that my observation leads me to believe that such an animal has a more exquisite sense of pain than many a navvy.

(c) *That the unit is greatly modified by its environment.* That occupation and habit have a definite effect upon the course and progress of evolution, and that therefore the infliction of pain by the human on the non-human affects very definitely those brain centers which regulate automatic motion, and those still higher centers which originate thought.

That is to say, that if a human were placed in such conditions that his metabolic processes of life went on in the constant presence of the taking the life of and inflicting pain upon the animal world, the brain substance would be modified. Just as a mirror reflects what is thrown upon it, so would the brain give evidence of this environment when its higher nature began to originate ideas and motives. That is to say, that if a race be produced in the atmosphere of killing, and with the practice of slaughtering and inflicting pain going on around, it becomes a really scientific fact—as opposed to a mere ethical conception—that the substance of the brain will be so modified in character that its centers, when they begin to originate impulses, will originate impulses of killing and cruelty. From the most materialistic scientific conception of race evolution, therefore, it becomes a matter of importance to terminate an environment of butchery and the infliction of pain.

Science, therefore, must recognize the effect of habit and environment on race evolution.

Remembering these points, therefore, let us consider the five arguments previously adduced as to the scientific relation of the human to the non-human races.

The first was the old fable reproduced from the fact in nature that the stronger ever preys upon the weaker, and that the fittest alone will survive. Man, therefore, being at the top, preys upon all beneath him.

Now I maintain that it is in the highest degree unscientific to contemplate one set of laws as if they were the whole. While we contemplate with a telescope the almost infinitely distant, we examine with a microscope the almost infinitesimally small. While we study the problem of centripetal forces in regard to dynamics, we none the less make allowance for the centrifugal forces also. So in the problems of evolution, it is easy to point to the palpable fact of individualistic antagonism and the survival of the one that fights hardest and holds out the longest, but this is only *one* side. There is the still greater evolutionary force contained in the principle of co-operation. Herbert Spencer has well put it that the state of *enmity* is ever tending to be eventually replaced by the

state of *amity* and this is but an expression of the truth that antagonism is a lesser dynamic force than co-operation.

The one-sided scientist may point to the thorn of the brier and the prickle of the thistle as instances of that antagonism which results in perpetuation of species, but he should also contemplate the tendril of the vine and the sweet flesh of the raspberry as instances where plants distinctly seek to perpetuate by invoking assistance, not antagonism. The vine leans upon the olive branch, and the raspberry gives the sweet fruit to the birds in order that the latter may carry away the seed and drop it in some new and fertile soil.

The one-sided scientist may point to the hosts of parasites that are ever destroying and living by the products of destruction, but he should also side by side contemplate the great principle of symbiotic existence, where the guest germ, while living upon his host's vital juices, pays him back in the work he does for him.

The terrible ravages of the bacillus tuberculosis may be pointed out as examples of the battle without mercy, but the existence of bacillus coli and the protective phagocytes of the blood must be contemplated side by side with them, as manifestations of the great league of amity which co-exists in nature.

It is true that in the very lowest forms of life you seem to get pure selfishness and antagonistic existence, the amœba is without father or mother, brother or sister, husband, wife or child, but one of the first steps of evolutionary progress is to manifest the interdependence of sexes for species perpetuation, and the next step higher is the material instinct of protection and the family tie of active co-operation. If I contemplate procreation in its purest scientific aspect, if I analyze motherhood into its simplest and baldest elements, if I dissect family life with the scalpel of critical contemplation, I find that the great scientific fact underlying them all is that evolution chiefly has its most stable basis in corporate co-operation and not in antagonistic warfare.

This then is my contention, that scientific man being the highest product of evolution must consciously recognize the deeper forces of progressive development, and manifest and cultivate them in place of the lower and more transient ones. The truest scientist is the one who comprehends most clearly the *whole* working of the laws of the universe.

The only scientific position, therefore, for humans to take with regard to fellow humans or non-humans, seems to be to terminate as rapidly as possible all forms of life, if any, which are distinctly inimical to the well-being of higher forms of life, and to apply the principle of co-operative assistance to every other form of life whatsoever, in order to consciously assist in this progressive evolution.

The second argument is that knowledge is the ultimate goal of scientists, and if this be so, and all intervening rights are to vanish, the rights of men alike, with the rights of animals, will disappear. Nay further, this argument would prove that experimentation on animals for the purpose of obtaining knowledge useful to the human race would be eminently unscientific, because knowledge gained by experimenting on

an animal refers in strictness only to animals of the particular class to which the one experimented on belongs. Upon the above ground scientific experimentation to obtain knowledge relating to the human animal should be carried out on human beings. If we accept as a scientific position that the attainment of knowledge is the ultimate of science, then I confess that animals have no rights whatever, but I must include the human animal among the rest, and therefore to put it in the terms of the title of my paper, *neither animals nor men have any rights whatever*.

The third argument appears to me to be unanswerable. If we adopt pleasure and pain as the ultimate standards of measurement, and aim at obtaining the greatest happiness to the greatest number, we must, in counting numbers, take value into consideration also, and confess that one life of high evolution is worth many lives of lower development. To ignore this is to ignore our scientific standards of comparative value. If, then, a man and a dog were in a boat together alone, and the problem were presented that one must die to enable the life of the other to be perpetuated, it would be in consonance with the scientific standard of life values that all else being equal, the life of the dog should be sacrificed to preserve that of the man. In the same way it seems to me to be equally sound to lay it down that if a human life is to be preserved for a definite time by shortening an animal's life by a similar period, or by inflicting an amount of pain which when weighed in extent and degree is less than the amount of pain which would result from the shortening of the continuance of the vital phenomena in the human, then it is scientifically sound that the life of the animal should be so shortened or the pain so inflicted.

I confess, however, that this abstract statement is of little value as a guide to material problems. We have no psychometer or angiometer, so that we cannot comparatively weigh lives or pains. We know that in certain diseases the pain becomes so intolerable that the patient begs to be put to death, but we have no method of gauging the point at which the pain of living exceeds the painful loss of dying. Again we may rightly claim that the life of a man is of more value than that of one sparrow, possibly of more value than a hundred sparrows, but is the life of a single Judas of more value than the combined lives of all the animals on the face of the earth? If not, then we have two definite points of value, viz.: *One human life is of more value than the life of one sparrow*. But *one human life is of less value than the combined lives of all the animals on the earth*.

But how shall we decide the method of obtaining even an approximate equivalent in such an immense area. We have no standards of life values, and, therefore, it is absolutely unscientific to talk about the necessity of sacrificing a thousand dogs or guinea pigs, if need be, to save one human life, because we do not know the comparative values about which we are pretending to dogmatize. Remember, too, that saving a human life simply means the lengthening of it for an indefinite period of a few minutes, hours, days or years, and is a very loose mode of speech. It may also mean the mere lengthening of it for a short time

in pain, or in idiocy, or in a state of semi-crippledom. Again, human lives vary much in value. I was careful to guard myself in stating my previous problem by saying "all other things being equal," but I am not sure that owing to many other things being unequal, it not infrequently happens that a so-called animal life is not less valuable than a human life, or that it may be even more valuable. As far as one's rough methods of estimation go I am often led to think that the life of some humans—wrecked, sin-blighted and sin-blighting—is really a minus value in the cosmos, and that the function of a more accurate science of the future may be called upon to set free those perverted forces that they may be sent back into the furnace to be reconstructed.

I have seen a semi-human dog and I have seen a semi-reptilic imbecile man, and with the rough standard of measure that I possessed, I should have estimated the life of that so-called dog to be of more value than the life of that so-called man.

Again, if this argument be scientifically carried out, sentiment must be excluded and not only must an animal life be sacrificed to save a human, but a lower human must be terminated to save a higher human. The old argument of the slave holder would be scientifically accurate. The economic theories of those races who eat their senile relatives would be scientifically sound, and the wastrels of our workhouses, our prisons, our asylums, and our hospitals would rightly be sacrificed for any purpose by which the better lives of the community would be saved.

Let me put this scientific position in the bald logical way it was once put to me by a Roman Catholic priest who was laying down this scientific law of comparative values, and the rightful sacrifice of the lesser on behalf of the greater. "It appears to me," he said, "to be scientifically sound that all who are condemned to death by law, or who are condemned by a competent tribunal as possessing lives which are either useless or harmful to the community, should be subjected to any experimentations which were found necessary for the welfare of the human race as a whole until they died; and that their dead bodies, if wholesome, should be made into soup, and distributed daily at the prison gates to their industrious and valuable, but poor, fellowmen!!!" To sum up this position, then, lives vary in value.

In case of antagonistic claims the lower developed life must be sacrificed to save the higher developed life.

We have, however, no standard by which to measure the value of lives.

Some non-humans may be of more value than some humans, and finally the law must be applied also as between humans of varying life values.

Judged by this standard there is no justification in slaughtering animals for human sustenance, first, because human lives can be sustained in equal vigor and perfection on a non-flesh dietary; and secondly, because we have no means of judging whether or not the lives of the countless animals which are slaughtered for the food of the one human, are not as a totality of more value than the one human life they are pre-

sumed to save. Judged by this standard, indiscriminate vivisection, e. g. the Pasteurian vivisections, which are said to acutely torture and destroy the lives of hundreds and thousands of dogs and rabbits, or the Mantegazzi experiments, which are records of fiendishly exquisite agonies inflicted on large numbers of animals, are eminently unscientific; because, firstly, it is the infliction of definite pain on and the definite destruction of, lives of lower animals for the problematical saving of the lives of higher animals; and secondly, because we have no scientific standard by which to measure the value of the numerous lives pained, shortened and destroyed, so as to weigh them in the balance with the human lives, if any, which have been spared the agony of hydrophobia and the loss of a shortened existence. Judged by this standard there is no justification for much so-called sport nor for such atrocities as are caused by seal fishing, or similar destruction of life, or infliction of pain.

The fourth position seems to be a begging of the question. It is said that the world agrees that flesh-eating is right and fitting though it entails much pain, and therefore vivisection, which entails comparatively little pain, is right also.

The world may say that flesh-eating is right though it entails enormous tragedies and agonies, but it does not follow that the dictum of the world, swayed by the love of selfish gratification, is right. It is, therefore, not scientific to take an unscientific dictum as the foundation for a scientific superstructure. It is true that an anti-vivisectionist who dares to judge and condemn a vivisectionist and yet eats flesh food himself is illogical, but the needless torture and destruction of animal life by the anti-vivisectionist is no scientific ground for acquitting the vivisectionist. Comparisons of this character are not scientific reasons, and therefore this argument may be dismissed.

Lastly, it is said that animals may be bred by men, and that therefore the man who gave them life, may use that life for any purpose whatever, for life being the greatest gift, no amount of pain he may inflict will outweigh the greater gift of life itself.

This is a startling proposition and a very subtle one, but it assumes where it should rather afford proof. What scientific evidence have we that man has the power to create life. He may say that here is the spermatozoon and there is the ovum, that if he interferes he may prevent the two ever coming into contiguity, and so may prevent the germinal vesicle and its subsequent embryonic development and perfect organism ever coming into existence; on the other hand, he may definitely take steps to bring the two into apposition, and so may claim that he is as much the creator of the new life as the inventor claims that he is the creator of a new product, because the latter has but organized and combined natural and pre-existing laws and forces to obtain the end which he has obtained.

A scientist may indeed say: "I have bred such and such an animal," but he cannot claim that he has given life to that which otherwise would not have had life, and I will tell you why. We have no evidence that the sum total of life can be increased. When we draw near to the fountain

head of vitality, we are no longer scientists but mere blindfolded children of the mist, feeling dimly in every direction, and so far only grasping shadows. When we have solved the mystery of vitality we may make a claim of this sort, or we may be conscious of the folly of claiming it.

At present, in our ignorance of what we are doing, it is unscientific to assert that we have given life (i. e. increased the sum total of vital force) to anything.

If amid the shadows there be any glimmer of light, it seems to lie in the direction of the constancy of the sum total of vitality, and that, therefore, though man may bring together all the mystic mechanism of reproduction there will result no developing organism unless there was "free vitality" to endow the apposed machinery. The Leyden jar may be mechanically complete, but it needs the electric force superadded to make the charge complete. The machinery may be perfect, but the steam must be added before the leviathan moves. It may, therefore be, that man by his breeding interference has merely attracted free vitality into one channel which would otherwise have been attracted into another, and that, therefore, instead of bringing a life into being and posing as the greatest benefactor by having given the gift of life, he may have done no more than thrown a lasso over a free life and brought it into his particular enclosure. Just as well might the hunter claim that he had given life to the wild horse he had captured, or the boy to the bird whose cage he had changed.

When all is involved in mystery, it is unscientific to make claims which cannot be substantiated by evidence, but if I read aright the fragmentary tracings on the great cosmic walls, the evidence is all against such a claim. It is, therefore, unscientific to claim the right to slaughter animals for food, or use them for experimental purposes involving acute suffering and death on the ground that the breeder had bred them and was therefore the donor of life to them, and had therefore a primary right to decide their fate. It was the old claim of the Roman slave owner that he had bred the children of his slaves, and therefore by an indefeasible claim had the right of life and death, torture or mutilation upon them. It is curious to see this old claim revived in a scientific garb, but to revert to the method of argument I have used so often, if it *be* true, it is equally applicable to men as to animals, to humans as to non-humans. I should have just as good a scientific right to inflict pain and death upon my children as upon my bred pups or lambs.

In each case the claim of being the absolute owner of a life I had created would be equally *well* or *ill* founded.

Many accusations have been levelled at science because it is said that the pursuit of science makes men hardened and callous.

But to say that science can harden or degrade man in his relation to animals is to malign the most sacred of all studies. The village lout may stick a cock-chafer on a pin, or tie a cracker to a panting, fear-stricken cat, or throw a pup into a pond and stone it till it sinks exhausted. A cruel woman may drive or spur the tired horse till it drops, or leave a

mouse to die of hunger in a trap, etc. The swell sportsman may wound and torture and kill his hundreds of beautiful pigeons, and leave a piteous leasing of wounded animals slowly dying in the hedges and in their holes—dying of acute inflammation, after he had passed on with his gun. The woman of fashion may order men to go out to the arctic regions and flay the half dead seal and leave it wallowing in blood and groans—a mangled mother with its little ones pitifully bleating round the frightful object hour after hour till they die of slow starvation. The butcher may perpetrate all the horrors of the slaughter house for gain. But to the true scientist all such atrocities are impossible. The cockchafer, or the merest bit of it, is a reverent mystery to be dealt with as a sacred temple of most sacred life. The higher science—as opposed to popular marvel hunting and self advertising—is always reverent in the presence of the mystery of life. The lowest animal must ever be treated with the respect which is its prerogative. Science elevates and does not degrade the position of the animal world, and the final point that I would make is that science *increases the rights of animals by deepening the rights of man*. The higher the position in which science can place man, the nearer to the source and fount from whence the laws of the universe proceed, the greater and deeper will be the reverence for animal life, because the clearer and fuller will be the conception of the higher forces of amity over enmity in evolution. The lower the man the more cruel is he to his beast of burden, the higher the man the more nearly he approaches to those heights of science and gnosis, which are the crowning stamp of the true scientist, the more reverence has he for his fellow traveler—a true brother in the eyes of science—on the same spiral pathway of vitality, towards a perfection of evolution.

These views may be undervalued on the ground that they are theoretical and can be brushed aside by the experience of hospital life which says that vivisection and butchery form the essential but sad constituents of every hospital that would cure the sick.

This is only the result of habit. Every new hospital copies most of the vices as well as the virtues of its predecessor, but that it is not necessary is proved by the fact that at the Lady Margaret Hospital, medical and surgical cases of the gravest character are treated most successfully on a strictly fruitarian dietary, and the products of active vivisection, as well the practice of vivisection itself, find no place in its pharmacopeia or routine.

DIAGNOSTIC POINTS BETWEEN HYSTERIA AND ORGANIC NERVOUS DISEASE.*

By M. W. HOGE, M. D., of St. Louis.

It is obviously of great practical importance both to physician and patient that we should be able to distinguish, in a case in which hysterical symptoms are present, whether or not all the symptoms are hysterical, or whether some of them are due to anatomical changes.

While in the majority of cases of either condition the symptoms are sufficiently well defined and characteristic to prevent serious difficulty in diagnosis, yet not infrequently do cases of undoubted organic disease present some symptoms which are of hysterical or at least of psychic origin, and occasionally purely hysterical symptoms will so closely simulate those of organic disease, that very careful study is necessary to decide to which condition they belong.

With this thought in mind I selected the above title when requested recently to occupy some vacant time on the program of this society.

On consideration, however, I soon perceived that for the paper to correspond with the title in the sense of thoroughly treating the whole subject of differential diagnosis, would occupy much more time, both in preparation and reading than was at my disposal.

So I concluded to limit myself to the report and analysis of one case at present under observation which seemed to require at least careful study before a positive diagnosis between hysteria and organic disease was decided on.

The patient is a male, white, of German descent, age 35 years, is unmarried, and has been a farm laborer most of his life, though spending a part of each year in the city. He was first seen on September 6, 1907. Nothing of importance was obtained regarding his family history. His sister says he was delicate as a child, and had spasms when teething. That he was healthy as a boy and young man, of average intelligence, industrious and orderly. He never drank much, but used tobacco to excess until recently. Denies venereal sores.

At the age of about 25 years he began to have attacks in which he became unconscious, fell and was convulsed. These continued at intervals for about two years, ceased under treatment, and have not recurred. In July, 1905, while at work in the harvest field, he noticed a sensation as though he had been struck in the face, and a feeling of general weakness, probably more pronounced on the left side. He stopped work for probably an hour, then resumed it, though still feeling weak. The next day he consulted a physician and ceased work, but was able to go about and has never been confined to bed. For several weeks he had a chill every second or third day. His sight became impaired, he thinks, soon after the attack just described. He continued weak, tired easily, his gait was unsteady, and he had a sensation of numbness

*Read before St. Louis Medical Society, October 26, 1907.

in his extremities, more pronounced on the left side. Says the right side of his face appeared swollen for several weeks after the onset of his illness.

His sister first saw him three weeks after the onset and says that his mental condition was altered, that he seemed "queer, foolish and childish." After about two months he improved and returned to the country, but after three weeks relapsed into his former condition. Since then he has grown better at times, then relapsed. His appetite and digestion are good, bowels regular. He sleeps well and quietly. The urine is slow in starting, but he is able to empty the bladder. Urine contained neither sugar nor albumin. Heart sounds normal, arteries soft.

He has no pain and says he feels well except for weakness and numbness in the extremities. For the past year he says that at intervals of a few days he has had a "drawing sensation in the right arm, from the elbow to the shoulder, followed by a chilly sensation all over." This lasts about 15 minutes, and he then feels as well as before. On inspection the patient appears fairly well nourished, though he says he has lost 15 pounds in weight, and does not seem anæmic. When in repose his expression is rather blank and staring. There is a tendency to stammering in speaking. His memory is fairly good, his account of his illness agreeing substantially with that of his sister. His comprehension is somewhat impaired. A statement at all complicated must be repeated, to be understood. He has no delusions, and has had no emotional excitement or depression. His conversation in general gives the impression of some degree of mental enfeeblement. His station and gait are ataxic. He is unable to stand with his eyes closed, walks with his feet wide apart and veers from side to side. There is also some ataxia of the upper limbs, more marked in the left. His pupils are equal and react to light and accommodation, though somewhat slowly. The eye movements are equal, ample and well co-ordinated.

His muscular strength appears distinctly less than normal for one of his physical development, and the left side is weaker than the right, including the face. When the limbs are extended, the left become tremulous and droop sooner than the right, and when the face muscles are kept forcibly contracted, a tremor develops on the left side, and it relaxes somewhat while the right side continues firmly contracted. The tongue is protruded in the median line.

There is a left hemianæsthesia, reaching not quite to the median line on the head and face, but extending somewhat beyond it over the abdomen, involving both limbs on this side, and somewhat more pronounced over the extremities. It is not absolute, and is more pronounced for pain and temperature than for touch, which is not much impaired. It involves the buccal mucous membrane and conjunctiva of this side. It has been constantly present to the same extent, but some variations in intensity have been observed. As stated, there is also subjective numbness in the extremities, most in the hands. The abdominal and cremasteric reflexes have been uniformly absent. The tendon jerks of

the triceps and supinator longus are distinctly stronger on the left than on the right, though probably exaggerated somewhat on the right also. The knee jerks are exaggerated. Usually a slight foot clonus may be obtained on the right, and uniformly a well sustained one on the left. The Babinski reflex can usually be obtained on the left, occasionally on the right. With such symptoms present, why, one may ask, should there be any doubt as to the fundamental disturbance being of an organic character?

Such doubt can hardly exist after it has once been established that they are present. To establish it has required some effort and discrimination.

The hemianæsthesia in this case is of the familiar hysterical type, and hysterical patients frequently complain of weakness or even paralysis, especially on the anæsthetic side. Their tendon jerks may appear to be increased, and occasionally the test for the foot clonus produces a tremor so closely resembling it as to deceive experienced examiners, so that I felt justified in considering the possibility of the whole disturbance being hysterical.

In eliminating the hysterical hypothesis, we first consider the mental state of the patient. He exhibits neither the undue concern about his ailment, the introspection and analysis of symptoms, the brooding over his condition, which we usually observe in hysterics, nor on the other hand the apathy and indifference which they occasionally exhibit. He is concerned about his illness, is anxious to get well and hopes that he may, readily takes notice of any apparent improvement and is on the lookout for it. The self-centered attitude of hysteria, interest in his malady as such, the craving for the interest and sympathy of others, have not been exhibited, nor the varying emotional states.

Such mental change as has been observed is in the direction of simple deterioration. While the anæsthesia is of the hysterical type it has so far not shown such alterations of intensity and distribution as to definitely characterize it as such, and since it might also result from an organic lesion, we cannot yet be positive as to its nature. The absence of the abdominal and cremasteric reflexes is so far favorable to the organic hypothesis, that it harmonizes with the other symptoms.

In hemiplegia, their absence on the paralyzed side and presence on the sound, is highly significant of the paralysis being organic. But in this case there is muscular weakness and an increase in the tendon jerks and slight foot clonus on the right side also, so that their absence on both sides is consistent. The point demanding most careful study is, whether the ataxia, increased tendon jerks and foot clonus are really present or only simulated.

As stated, the foot clonus may be closely simulated by a tremor. The intensity of the tendon jerks varies in different persons, and their production in a hysteric often causes a semivoluntary muscular contraction which increases and prolongs the reflex movement. These sources of confusion are the product of the mental state of the patient. She (or he) is uneasy and apprehensive of the examination, fears that pain will be caused, that too much or not enough will be found.

If the examiner gains the patient's confidence, quiets fears and succeeds in thoroughly distracting attention from what is being done, probably in all cases the spurious reaction will disappear. In the few cases of marked difference in the reflexes on the two sides and of tremor resembling foot clonus in hysteria that I have observed, this has occurred. Hysterical ataxia will disappear under the same procedure. Where distraction of attention cannot be otherwise obtained one would be justified in employing hypnosis, if it can be induced.

In the case that I report the opposite results are obtained. By making a strong voluntary effort, the patient can to some extent control his ataxia, but distraction rather increases it. In testing for the tendon jerks and foot-clonus, if he is watching the procedure and endeavoring to assist in placing the limb in a proper position, the reflexes are not so well developed. The tendon jerks are most pronounced, the clonus most distinct and well sustained, when complete muscular relaxation and entire diversion of attention are obtained.

The Babinski reflex, so far as I know, has never been observed in pure hysteria. Too strong or sudden irritation of the sole may produce a voluntary movement simulating it, but this may be distinguished by its suddenness, and by a general contraction of the foot muscles, producing a movement of withdrawal.

The reflex is a deliberate upward and backward movement of the great toe, produced by stroking or pricking the sole with sufficient force to produce moderate irritation but not decided pain.

While it was not obtained as promptly and distinctly as it is in many cases of degeneration of the pyramidal tracts, it could be produced at almost every examination on the left side, and occasionally on the right. From the above symptoms I feel justified in concluding that we have in this case a left-sided hemi-paresis (not being intense enough to be styled a hemiplegia) with slight paresis of the right lower limb and an ataxia, all due to organic lesions of the central nervous system, and a hemi-anæsthesia which is probably due to the same cause, though we cannot positively exclude its being of psychic origin.

I have in this analysis purposely refrained from employing the ophthalmologist's report, in order to illustrate to how definite a conclusion we may arrive in such a case without its assistance, not meaning to imply, however, that it should ever be neglected. Two examinations have been made by Drs. Calhoun and J. F. Shoemaker.

They report no ocular palsies except a slight paresis of accommodation. A distinct contraction of the visual fields, the relation of the color fields remaining normal. An atrophy of the optic nerves, uniform over the disc, and rather more advanced in the left than in the right, and which has increased in the past month. The retinal arteries are about one-third the size of the veins, which indicates that there has been a low grade of optic neuritis. Vision with correction at the first examination, 2-3.

Organic brain disease is one of the most frequent causes of optic atrophy, and its presence is in harmony with the conclusion already reached.

THE HISTORY OF THE HOUSE; THE STRUGGLE FOR
FRESH AIR AND LIGHT.*

BY GEORGE M. GOULD, M. D., of Philadelphia.

Physicians and sanitarians agree that tuberculosis and pneumonia, if not other diseases, are house-diseases. In some way these afflictions depend upon improper living of men and women in badly constructed or ill-managed houses. In fighting the causes of these diseases we are in one way or another brought back to the question of houses, ventilation, etc. But as in all other etiologies and pathologies, we can not deal intelligently with the evil, nor accurately meet the problem in our treatment, unless we know the natural history of the cause, so in this we must know the history of the house in order to understand the finished result. To teach people the use of ventilation, cleanliness, and light, we must understand the reasons why, at present, they really prefer foul air, filth and darkness. For it is true that the vast majority of people of the world do prefer dirt, disease and darkness, and the sources of that preference must be seen in order to combat the evils. Go where one will in all occidental peoples there is either an utter indifference to the need or use of pure air, clean rooms and light, or there is a genuine dislike or fear of these things. Most animals are, in a state of nature, cleanly. The hog and other wallowing animals seem to us to love filth,—which means that by wallowing they avoid the diseases conveyed by flies,, mosquitoes, etc. The savage who covers his body with paint, mud, or worse materials, accomplishes the same result in a similar way. If you go into the majority of rooms and houses of the farming, working and poorer classes of our country, you will find the windows closed, the air foul, the food in summer covered with flies, the beds infested, etc. Only history can tell us why. Habits are national, racial, even cosmical, and the longer they are in forming and fixing the harder and more protracted will be their uprooting. The habit of bad houses and of house-diseases is the oldest of human habits.

The Homeric House, like the house of all primitive peoples, was a single room. It was four-cornered, and had openings in the upper part of the walls to let in light. These, also, of course, let in air, which was not always so undersired as in more northern climes. There is thus a most real and physical reason for the great truth of the proverb, *Ex Oriente Lux*. The Eastern houses had more light in them, because built for human beings, not cattle, and because light could be had without so much cold, as in the north. The house of the chief, lord, or king, was on the top of a hill, partly for pro-

*Notes, with some of the slides reproduced, of a stereopticon talk delivered before a number of medical, public health and other societies.



FIG. 1.—The open central court of the Mediterranean house, with windowless outer walls.

tection from enemies, and about it, and stretching away below were the huts of his common people, serfs, servants and soldiers. Thus grew the *πολις* or city, whence we get our own words, police, politics, political, etc. The earthly lord, in later times, became, in a way, the heavenly lord, and the hill-top kingly houses became temples. But however modified the original one-roomed windowless house was always to be discerned. The Acropolis at Athens, Rome, on her seven hills; the cities of Hissarlik, Tiryns, Argos, etc., are illustrations of the hill-top origins of the Mediterranean and more Oriental cities. The Roman capital, as seen from Mt. Palatine, and the Acropolis at the time of Hadrian, illustrate the history and early importance of the hill as a settlement place.

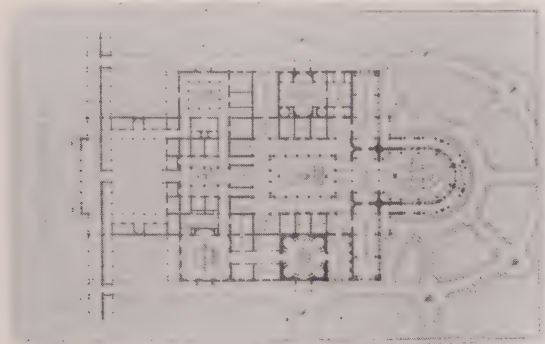


FIG. 2.—Ground-plan of a rich Roman house.

Italy was settled by invasion, and this emphasized the need of protection from enemies. The huts of the invaders were round, built close together, and surrounded by wooden palisades. They were usually on piles; they were of bushes or clay, and 10 or 12 feet in diameter. The need of more room was first met by making the round hut into an oval one, or better by bulging out the top. The materials being mostly inflammable, fire was also a great enemy, and the rain made ugly gullies between the huts and undermined them. Increase of wealth helped to change the round or oval hut into a square one, and widened the spaces between them; but, as pressure increased, the two walls of adjoining houses were made into one partition wall, and thus the street, with continuously adjoined houses, came into being.

Especially in Italy there was a medical fact that dictated the location of towns upon hills. The lowlanders were sickly, had ague, or as it was called, malaria, while the highlanders were more free from the pest.* It was not a very conscious plan, but the healthy, on Darwinian principles, soon "inherited the earth," or got it somehow.

The better and larger Mediterranean house always preserved certain peculiar characteristics, especially the windowless outer walls, and the open central court. Air and light were obtained from this court. How it worked out in the houses of the wealthy may be seen in the ground-plan of a Roman rich man's house, *e. g.*, that of Petronius (of *Quo Vadis*) and in pictures of similar Grecian interiors. The warm, sunny climate permitted this type of house, and encouraged it.

North of the Alps the climate was cold, cloudy, foggy, etc., and the open court in the center was impossible, and if lit at all, the northern house had to get its light through the outer walls. In attempting to shut out the cold air, however, as glass had not been invented or come into common use, the air itself was shut out, and also the light. And from this comes the tragedy of our civilization. Upon this central fact we must keep our attention fixed if we would understand the history of the house, and one of the chief miseries of our life.

If transplanted north of the Alps, the Mediterranean type of house soon died out, because not adapted to our needs. In fact, we Teutons had to begin all over again, and went about it as did the earliest savages and preclassic hut-builders. How did they go about it?

Ingenuity was wanting in the Cliff-Dwellers of Arizona, and great labor was necessary to replace it. Enemies, here as well as in Greece and Italy, compelled them to seek the hill-tops, or the cliffs, or caves. Also for protection from enemies, the lake-dwellers had to build their huts on piles over the water.

*A suggestive book has lately been published: "Malaria, a Neglected Factor in the History of Greece and Rome," by Ross, Jones and Elliott. "The Conquerer of Greece was not so much the Macedonian or the Roman as that great tyrant which now holds half the world—malaria."



FIG. 3.—The most simple and primitive of all houses, the Negrito house of Luzon, Philippines, yet the trees, rafters, etc., are visible.

But here should be noted the fact that governs almost all primitive hut-building, and the entire subsequent history of the house: Animals and men are parasites upon the plant world. The plant can make its tissues out of the sun, air, and inorganic earths in which it is rooted. The animals and man can not do so, but must construct and nourish their organs from the materials wrested from the vegetable world. So in the other great building work of mankind, the house is only to be made by materials furnished by plant-life. Not even the most artificial of civilized houses can altogether forego the



FIG. 4.—Moro house (Philippines) under construction at the St. Louis Exposition. Note the forks and rafters.



FIG. 5.—The Moro tree-house does not differ from that built upon the ground.

sapling and tree; its fashions, at least, are derived thence, and the early huts and the houses generally, of the past and present, are stamped with the seal of the tree. Keeping that in mind, we have an explanation and a revelatory insight into the history of architecture, and of civilization itself, which is a product of architecture. The Negrito houses of Luzon, Philippines, are the simplest in the world, but the trees, rafters, etc., are plainly seen. A Moro house, as illustrated in St. Louis, shows the forks of the rafters, seen also in the Moro tree-house.

The lake-dweller's house was made entirely of pales, saplings, trees, and was covered with brush,—thatch, or grain-stalks. In the



FIG. 6.—In the rigorous climate of the Esquimaux the poles are covered with the skins of animals.



FIG. 7.—In hot climates the house may become nothing more than the roof.

most rigorous climate of the Esquimaux the always visible poles are as necessary, but the cold compelled them to use the skins of animals to make it warmer. When the climate is very hot, and enemies are not about, the hut may be only a roof, as with the Indian on the Amazon, or among the Queensland aborigines. When the enemies are avoided by the hill-top protection, and when domestic animals are kept, the Philippine method is excellent. The importance of poles, as well as of thatch, and better constructive skill is shown by the Bakiris of South America. In China today millions of people are living in ingenious houses, but all upon the same plan. Where the summer is hot and the winter cold, as among the Kamchadales, one family may have one or more houses elevated on piles, and another below to protect from the cold. To keep their grain, etc., the Ainhus of northern Japan make elevated store-houses. Protection by palisade walls is shown in this village of the Bechuanas in Africa, and there is the beginning of a street. The beginning of a second-story house, the need of great protection from enemies, and considerable building skill, are all exhibited by the Arfaks of New Guinea, and all three



FIG. 8.—If enemies are avoided by hill-top protection and domestic animals are kept, this (Philippine) method of house-building is adopted.



FIG. 9.—With superior constructive skill the Bakiris of South America make better huts, also out of poles and thatch.

also among the Tagals of the Philippines. This well-made house of a Hova chief in Malagassy is noteworthy; there are three or four stories, an excellent roof, many rooms, roof and gable windows, etc. But do not fail to notice the V-shaped extensions of the rafters at the extremities of the ridge-pole.

Three occupations have come down to us from the earliest barbarisms, and are today persisting among us the same as throughout all human history. They are that of the savage, that of the charcoal-burner, and that of the soldier. And their house building epitomizes and illustrates the history of each. The savage, note well, preserves



FIG. 10.—The ordinary Chinese peasant house is constructed on the same principles with similar materials.



FIG. 11.—The African Bechuanas protect their similarly constructed houses by palisade walls.

the most primitive and make-shift style, appositely illustrated by the house of our own North American Indians. Columbus had no kodak, but we know the Red Man's tent of that time was a sorry affair. That of a modern chief is much "smarter," as he could get his canvas from civilization's looms. Poles, and always poles, are to be noted! In the progress of time the poles became more scarce, or the charcoal-burner* wanted a better-protecting house; but he had no mind to change his architectural style, and he built his cone-like teepee tent of stone. The chimneyless neighbors needed charcoal to burn



FIG. 12.—The Arfaks of New Guinea make their houses as all others have done, but secure protection from enemies by mounting them on poles high in the air.

*For a more detailed setting forth of the "Evolution of the English House," see the excellent book with this title by Sidney O. Addy, Swan Sonnenschein & Co., Lim., whence I have taken some of the following illustrations.



FIG. 13.—Note the forks of this well-constructed four-story house of a Hova Chief of Malagassy.

in their houses, to make horseshoes with, and to make transportation more easy; but they did not change their house-shape for thousands of years. So powerful is tradition and fashion, that there are perpendicularly-walled houses still standing whose doors and window-jambs still lean backwards. The house of the soldier illustrates and epitomizes the entire history of the race; at first, as in the invaders of Italy, it was a mere roof, or a round and thatched cone, or poled teepee tent, like that of the Indian, and this has come down to us as the form still existing. But as the round European village houses were perforce compressed into squared ones, so the most modern military tent, which all have seen, has become square. But it is single-roomed, of course, and one-storied. Some of the best are



FIG. 14.—The red man's teepee tent; the canvas is supplied by civilization's looms.



FIG. 15.—The oldest house, that of the charcoal burner (England); it is a teepee tent in stone.

beginning to show the beginnings of perpendicular side walls. A photograph of a part of the camp during the recent Manassas manuev-



FIG. 16.—The modern military tents preserve the traits of all the oldest types of houses.

ers shows all three styles of house or tent in contiguity. That with rafters alone at the left, that of the round or teepee fashion, and the squared style with upright side walls.

(To be Continued)

MEDICAL AND SURGICAL PROGRESS.

OBSTETRICS AND GYNECOLOGY.

IN CHARGE OF
HUGO EHRENFEST, M. D.

BIER'S HYPEREMIA IN GYNECOLOGIC PRACTICE.

1. BIER'SCHE STAUNUNG IN DER GYNAEKOLOGISCHEN PRAXIS.—J. Rudolph (*Zentralbl. f. Gynaek.*, No. 39, 1905).
2. BIER'SCHE STAUNUNG IN DER GYNAEKOLOGIE.—J. Eversmann (*Ibid.*, No. 48, 1905).
3. DAS BIER'SCHE VERFAHREN IN INTRAUTERINER ANWENDUNG.—F. Turan (*Ibid.*, No. 28, 1906).
4. DIE BEHANDLUNGSWEISE NACH BIER IN DER GYNAEKOLOGIE.—L. Nenadovics (*Gynaek. Rundschau*, No. 9, 1907).
5. DIE SAUGBEHANDLUNG IN DER GYNAEKOLOGIE.—C. Weinbrenner (*Muenchn. med. Wochenschr.*, No. 40, 1907).
6. ZUR BEHANDLUNG DER DYSMENORRHOE.—O. Polano (*Ibid.*, No. 35, 1907).
7. ZUR BEHANDLUNG DER DYSMENORRHOE VON DEN BRUSTDRUESEN AUS.—H. W. Freund (*Ibid.*, No. 43, 1907).
8. ERWIDERUNG AUF DEN ARTIKEL FREUND'S.—O. Polano (*Ibid.*, No. 47, 1907).

"Stasis" (Stauung) can be produced for therapeutic purposes in three ways: by a constricting bandage, by thermic influences, and by suction.

A constricting bandage could be applied only around a long cervix. This limitation probably is the reason why this form of hyperemia has not been used in gynecologic work.

Heat in the form of hot air, the hot-water bottle, cataplasm, sitz-bath and douche has been for many years very generally used in the therapy of gynecologic diseases, and quite recently Hoermann (*Zeitschrift f. Geb. u. Gyn.*, Bd. 61., H. 1) has shown convincingly the many advantages of this form of conservative treatment over operative interference, in inflammatory processes of the uterine appendages.

The last mentioned form of "Stauung" suction was introduced into gynecologic work by Rudolph (1). He closed the ordinary tubular glass, or hard rubber, speculum with a cork stopper through which a glass tube is passed. To the latter a rubber tube is attached connected with the suction syringe. In his opinion inflammatory processes of the cervix and body of the uterus are especially suitable for this treatment; but he also mentions that possibly good results could be obtained in cases of amenorrhea, or in cases of rigid cervix before instrumental dilation is attempted. Shortly afterwards Eversmann (2) reported similar experiments made in the gynecologic clinic of the University of Bonn. The importance of constantly controlling the effect of suction by watching the color of the cervix and the amount of the discharge, led him to construct a special apparatus. It is a tubular speculum made of glass, closed at one end, thus resembling in shape a large test tube. Laterally, a small glass tube is attached through which the air is pumped out. He considers cases of endometritis with a profuse discharge

as especially suitable. Firm, sensitive adhesions in the posterior cul-de-sac, according to his observations, soften and gradually disappear. Turan (3) anticipated a still more pronounced effect by a direct application of the suction to the endometrium. For this purpose he constructed a thick, metal uterine catheter with oblong openings at its distal end. He emphasizes that his method, in contradistinction to that of Rudolph and Eversmann, does not cause severe, labor-like pains. The reason for this seems obvious. Turan believes that his apparatus produces a negative pressure in the uterine cavity, and even measures it. He undoubtedly is mistaken. The uterus is not a rigid bag. If the air is pumped out, the soft endometrium must be sucked into the slit-like openings of the catheter. The negative pressure indicated on the manometer certainly does not exist in the uterine cavity, but only in the apparatus itself. Among the results obtained by his method the author mentions cessation of dysmenorrhoeic pain, improvement of appetite, disappearance of the vaginal discharge and rapid healing of cervical erosions.

According to the teachings of Bier, passive hyperemia is preferable to active hyperemia in the treatment of all acute inflammatory, i. e., bacterial, processes. But for these processes in gynecologic practice, Nenadovics (4) reasons, suction is contraindicated. Suction applied to the cervix cannot exert any effect upon the distant appendages, and may prove dangerous on account of its pulling effect on the uterus. Thus it would seem that, in accord with the ideas of Bier, active hyperemia is the method especially adapted to gynecologic practice, and experience certainly bears out the correctness of the deduction. We need only remember the general use of heat, already mentioned. Nenadovics thinks that the best results will be obtained if an active hyperemia could be produced locally, limited to the area of inflammation. For this purpose he constructed still another apparatus. It is a glass speculum similar to the one devised by Eversmann, except that it carries two small glass tubes at its distal end, one being half as wide as the other. The narrower tube continues into the speculum up to its cervical end. Through it a hot fluid is permitted to enter the speculum. The fluid escapes through the wider tube and in this way a negative pressure is produced in the speculum. The result is a combination of an active hyperemia, produced by the hot fluid, and a passive hyperemia, caused by suction. But this author also believes that he can produce active hyperemia by means of suction if he applies suction rhythmically. He connects a syringe with his speculum, draws out the plunger but immediately releases it again, and continues this procedure. The author is convinced that his new method widens the indications for Bier's treatment in gynecologic work to a considerable extent, because the active hyperemia of his combined heat-suction method seems so well applicable also to inflammations of the uterine appendages.

There are a few other favorable reports extant (Weinbrenner (5), Bauer, Kroemer, Trancu-Rainer, etc.), but they are all based upon observations made on comparatively very small numbers of cases.

Thus it can be seen that the application of Bier's principles in gynecologic therapeutics is still in the experimental stage. Nevertheless, results so far obtained would seem to justify some hope that our limited variety of conservative methods in the treatment of inflammatory processes of the female genitalia, especially of tubes and ovaries, some day may be enriched by a new procedure, possibly as effective as the tampon.

A rather unique suggestion has of late been made by Polano (6). He advises the application of large suction cups to the breasts just before menstruation is expected in all those cases of dysmenorrhea in which internal medication, or local surgical interference, has failed to give results. In his opinion both theoretical considerations and clinical observations tend to prove a certain antagonism in the function of breasts and ovaries. He thought that an overstimulation of the breasts would reduce ovarian function, and thus probably lessen dysmenorrhoeic symptoms. By means of a few histories of cases observed by him, the writer illustrates the fact that not only was the dysmenorrhea influenced favorably, but also that the appearance of the flow was retarded. In a very interesting manner Freund (7) attempted to prove that this assumed "antagonism" of function between breasts and ovaries does not exist. He thought that if suggestion, as an explanation of Polano's results, could be eliminated, there was still another explanation left—the effect of all irritation of the breasts upon the uterus itself. This fact was known to Hippocrates, who advocated the application of large cupping glasses to the nipples in all cases of profuse menstrual hemorrhage. In a new article (8) Polano defends his position and quotes the various facts which induced him to believe in the existence of such an antagonism.

ORTHOPEDIC SURGERY.

IN CHARGE OF
NATHANIEL ALLISON, M. D.

ISCHEMIC MUSCULAR ATROPHY, CONTRACTURES AND PARALYSIS.

The condition known as Volkmann's Paralysis or as Ischemic Paralysis was first described by Volkmann in 1875. Since the appearance of Volkmann's case, the Paralysis which bears his name has been described and investigated by many observers. In 1884, Leser added considerably to the knowledge of this condition and attempted to produce it experimentally on the limbs of animals. Though his experiments were not successful in producing this type of paralysis, he set forth a description of the pathological changes which it entails that has been the basis of most of the subsequent writings on this subject, and his name has been associated with that of Volkmann, so that in Germany the affection is designated the Volkmann-Leser Paralysis and Contracture.

During the last year Charles A. Powers (Jour. A. M. A., March 2nd, 1907) has contributed a valuable article containing an analysis of the fifty-two cases reported in the literature. This analysis which includes the original case of Volkmann may be summarized as follows:

Age. While in a few cases the exact age is not stated, there is reason to think that in at least forty of the fifty-two instances the patients were between three and twelve years of age. Over one-half of these were from five to ten years of age. Of the remaining adult cases no patient was over thirty-five.

Sex. When sex is mentioned, we find males, thirty-four, females eleven. In the English series the sexes are about equally represented. Nearly all the German patients were males.

Location. Of fifty-two cases, all but two were seated in the upper extremity. The arm proper (including the elbow joint) and the forearm were involved in about equal degree. Lesions of the upper arm were limited invariably to the lower third. It would seem that in the majority of the forearm cases the lesion was near the middle; both bones

were usually involved. In the minority of cases the lesions were seated in the upper or lower third of the forearm.

Character of Injury. In the vast majority of cases this was a fracture.

General Results Independent of Treatment. It is difficult to determine this. Of fifty-one cases in which the result is stated, we find complete failure in ten, some improvement in fourteen, and a relatively good result in twenty-seven. The latter implies more or less return of function. Even in cases with a naturally poor prognosis time often accomplishes much. In but few cases is the end-result noted.

General Results as Based on Treatment. Operative procedures in the main are limited to cutting operations, tendon lengthening, resection of bone, and, in a few cases, tenotomy (the two lower-limb cases) and the resetting of badly healed fractures. In twenty-two cases treated by operative procedure a good functional result seems to have been secured in the majority. In thirty non-operative cases (simple tendon stretching being placed here) good results were secured in a minority only, and in several of these improvement was only apparent after many years of observation.

Alex. Hugh Ferguson in a recent original communication (Western Canada Medical Journal, January, 1908) states that ischemic atrophy and paralysis occurs in muscles from which the blood supply is more or less cut off and may be due to the following causes:

1. *Arterial*—depending on two causes: (a) Interruption must be nearly complete; (b) interruption must be of more than two or three hours' duration, otherwise it is easily tolerated—sometimes incomplete interruption for several days.

2. *An Interrupted Venous Return.*

CAUSES. 1. Embolus—cardiac.

2. Thrombus—syphilitic endarteritis, or following acute infectious disease.

3. Raynaud's disease—changes in vessels due to defective nerve innervation.

4. Direct injury to a vessel.

5. Cold.

6. Most common of all—*tight splinting*.

He gives the following symptom-complex and pathologic anatomy:

Paresthesia—numbness and tingling in parts of limb affected, and perhaps combined with alternating sensations.

Severe and often paroxysmal pain in muscles followed by cramps and spasmodic jerkings.

Limb often pale, but sometimes cyanosed and cold.

Electric irritability of muscle lost after ischemic condition has lasted five hours, and the muscles are quite flaccid and powerless, as seen in operations after prolonged use of Esmarch's bandage.

After seven hours, muscular rigidity and painful contractures begin. These increase in severity, but disappear in two or three days, leaving muscle again flaccid.

Oedematous condition from more or less established collateral circulation. Muscles now tender on pressure.

Swelling gradually disappears; muscular atrophy becomes manifest, muscles being hard and firm.

Contractures follow—hand flexed at wrist, and fingers at phalangeal joint. Final contractures due to atrophy of muscles and overgrowth of fibrous connective tissue.

Atrophic changes in the skin often present.

COURSE—This depends upon the duration of the primary ischemic condition. When cramps and rigidity have set in, probably no immediate recovery of the muscle is to be looked for, but short of this the muscles may readily recover, if the blood supply is restored.

In cases where cramps have appeared, it is probable that many of the muscular fibres die, and have to be replaced by regeneration—a long and slow process, or by repair.

When ischemia is of greater duration, and the muscles have become flaccid, it is not probable that any great amount of restitution can occur. However, certain fibres may have escaped, and from these new fibres may be formed, but the amount of recovery will be small. In such cases the muscles rapidly atrophy, becoming tough, hard and contracted.

Pathologic Anatomy. A. If blood supply is completely interrupted.

1. Muscle is gray, dirty yellow color, dull in appearance and friable.
2. Almost complete absence of muscular nuclei.
3. Usually no fatty degeneration.

B. If blood supply is partly interrupted.

1. Muscle firm and tough; more or less normal in appearance.
2. Under microscope—great increase of fibrous connective tissue between bundles of muscular tissue and between individual muscle fibres and cells.

3. Fibres have lost their polygonal form; are smaller and rounder, but maintain their striae even under extreme atrophy.

Lorenz in 1898 gave a very careful description of the clinical phenomena attending this form of paralysis, describing the true Volkmann type as always resulting from over-tight splints or dressings usually after a fracture, but stating, however, that the symptoms are the same whether the condition is brought on as a result of disease of arteries (such as trauma, embolism, thrombosis, etc.) or exposure to cold. He described the development of the condition as follows:

Very soon after the splints or bandages are put on the injured limb, the patient suffers pain, and the portion of the extremity which is free begins to swell. The pain and swelling increases steadily and if the bandages or splints are not quickly removed, the muscles become rigid and begin to contract. It will be found at this time that the muscles are very sensitive and that occasionally paresthesia exists. After the bandages have been removed, the muscles swell; indicating the development of myositis. This swelling subsides after several days and the muscles become permanently shortened and cicatrized. If the bandages are not removed within five hours, this rigidity which has been described as corresponding throughout to rigor-mortis is sure to supervene and having once developed, the muscle is lost although it need not become gangrenous.

As to the condition being caused by the application of Esmach's bandage, Powers states that where this was assumed to be instrumental as a causative factor its application was followed by the use of splints and bandages. Also that in nearly one-half the cases there was a fracture at the lower end of the humerus which leads to the suspicion that in some instances the brachial artery may have been compressed between the splint and the lower end of the shaft of the bone. Powers' paper, in fact, gives the most comprehensive and careful summation of the literature on this subject that has as yet appeared. We shall take the liberty of quoting him again in the consideration of the medico-legal aspect of this condition. It did not occur to Volkmann or to Leser that

operative measures could be employed for the relief of this condition. The first tendon lengthening was done by Davidsohn in 1891. In 1896 Henle excised 1.5 cm. of the radius and ulna; this being the first resection done for the relief of this condition. Since these two operations, the operative treatment of this condition has come into recognized standing and general use.

Tendon lengthening and bone resection have been discussed quite recently by Kleinschmidt (*Deutsch Med. Woch.*, November 17th, 1907, No. 17, p. 679). He states that in cases of not severe contracture, it is his habit to treat them with massage and muscle stretching, but in severe contractures, he believes in the exsection of bone or the lengthening of tendons. In one of his cases he removed 3 cm. from the radius and ulna and established a good result.

Hoffmann (*Zeit. für Ortho. Chir.* Bd. 19 H. 1-2) reports a case of fracture of the lower third of the arm followed by an ischemic paralysis of the forearm; the hand being held in a position of right angled flexion and held stiff; the fingers were slightly flexed at the proximal joints, and there was very slight motion. The treatment consisted in operative lengthening of each of the shortened muscles and although the operation was difficult and tedious, the result was excellent.

Zoppi (*Tipogr. Bardellini-Legnago*, 1907) reports a case of supination of the left forearm after an old fracture of the elbow joint; the hand being much atrophied, the fingers and wrist joint held in extreme flexion, and ankylosed, active movement very slight, sensation undisturbed. A plastic operation was done on the tendons and the ankylosis was broken up manually. This was followed by placing the hand in extension and later by active and passive movements with a return of function.

Blenke (*Muench. Med. Woch.*, 1907, No. 2, p. 100) reports a case of ischemic paralysis following a fracture of the forearm; the hands and fingers being flexed and motionless. He removed here 1.5 cm. of the radius and ulna; the bones being united with silver wire. The end result was a return of function.

Hildebrand (*Sammlunk Klin. Vortrage N. F.* No. 437, *Chir.* No. 122) has written an article on the knowledge that exists on the subject of "Ischemic Muscular Paralysis and Contractures." He states that in the great majority of instances the injuries which proceed this paralysis are of two types; the first a fracture of the lower end of the humerus and the second fracture of the forearm. He collected thirty-five cases of the first injury and eighteen cases of the latter.

Hohmann, of Dusseldorf, reported a case at the Congress of German Orthopedic Surgeons during the last year as follows:

A young girl with ischemic muscular contracture of the forearm following a supra-condyloid fracture of the humerus, which presented severe contracture of the flexors of the hand. Hohmann operated six and one-half years after the injury, lengthening the flexor tendons and obtaining an excellent functional result. The etiology of this case is interesting in that the fracture was located opposite the bifurcation of the brachial artery. The process of healing involved the artery, so that pulsation could not be felt below the injury; the circulation being carried on collaterally.

Ischemic paralysis and contracture is a condition which is fortunately rarely seen. It seems fitting, however, to call attention to its importance, medico-legally speaking. From Powers' recent article we quote the following:

"In regard to the medico-legal aspects of Volkmann's contracture, Kriege writes as follows: 'The contracture occurred, as a rule, in children who had sustained uncomplicated fractures of the upper extremity. Plaster of Paris was used more frequently than splints. In nearly every instance there were 'warning signs' that the dressings were too tight. The diagnosis presents hardly any difficulty, Volkmann having laid down the rules. As to prognosis, the severe type of contracture and the prolonged paralyses are practically incurable, but all cases demand patient and careful treatment.'

"The medico-legal witness has to determine the following: (a) Whether an ischemic paralysis or contracture is present. This should not be difficult on careful notation of the electrical behavior of the muscles. (b) Whether the tightness of the dressings was at fault or whether there was originally a lesion of the artery; this is decided by the presence or absence of the pulse beat below the fracture. (c) What are the disadvantages to the patient arising from the contracture? and (d) Whether the surgeon did or did not give to the case the care that his calling requires."

The literature on this subject as collected by Powers and Ferguson and including the cases which have appeared during the last year is as follows:

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PATHOLOGY AND BACTERIOLOGY.

IN CHARGE OF
 CARL FISCH, M. D.

SERUM TREATMENT OF EPIDEMIC CEREBROSPINAL MENINGITIS.—Simon Flexner and J. W. Jobling (*The Jour. of Exp. Medicine*, Vol. 10, No. 9).—The work of Flexner on cerebrospinal meningitis was reported in the JOURNAL last year. This work consisted of original investigations of the biologic and other characters of the meningococcus that advanced our knowledge greatly. The report also contained information about experiments with an immune serum made from animals (monkeys, etc.), from which a prophylactic and apparently also curative serum could be obtained. The difficulty of determining the character of such a serum could not be overcome, but it seems that it is, after all, bactericidal. At the time this work was published, only a possibility of utilizing this serum in the human disease was expressed. The outlook was not good. The animal investigation had shown that the serum acted as a prophylactic and that, even within a short time after the infection, it would perhaps prevent further development of the disease. The conclusions to be drawn from this fact were that in the human disease this difficulty is almost impossible to overcome, on account of the rather late stage in which, in the majority of cases, the diagnosis is established. The period of incubation, so-called, that is the time in which, after infection, the disease progresses so gradually that subjective or objective symptoms are not noticed, is varying. With the appearance of the symptoms the stage of full establishment of the infection is always indicated; the organism is put to the work of inhibition, with other methods than it uses under normal conditions. If the organism is successfully assisted at this time by the serum, the chances are that with the sufficient degree of constitutional quality, it will give this work a chance to attain success. If, by systemic depression of the functional quality of the body, this work can not be done, as in previously weak individuals, or in later stages of the disease, such a serum can not help; on the contrary, it may lead to a hastening of the end. This great difference between the effect of antitoxic and bactericidal immune sera must be considered in the use of the meningococcus serum. Flexner has extended his work on 47 cases treated with his serum, of which 79.9 per cent died, and 20.1 per cent recovered. These cases were not submitted to treatment at the same period of the disease, so conclusions from the figures can not be made. There were, however, 18 patients treated in the so-called first three days of the disease with a recovery of 88.9 per cent, and a death rate of 11.1 per cent. While this last figure appears to be indicative of the beneficial

action of the serum, the number of observations is too small to draw conclusions. The character of virulence of the meningococcus varies greatly in different epidemics, and even without serum, the death rate, it is well known, varies remarkably. Flexner's work is immensely important, theoretically and practically, as indicating that the final victory in the fight against the pest is certain. For the present, as the author himself says, the knowledge is only empiric, and it will need a much more extensive comparison to establish the truth. So far, the results are of such nature that the use of the serum, with proper valuation of the individual quality of the single case, is definitely indicated, most likely allowing of a better prognosis, and, at all events, when used in the earliest stages, without apprehension of causing by its use aggravating or disturbing changes in the condition of the patient. The results of Wassermann and some others in Germany, from a serum prepared by Wassermann, are more limited in the number of cases, but point in the same direction as those of Flexner.

EXPERIMENTAL LYMPHATIC SPIRILLOSIS IN GUINEA PIGS.—W. Ch. White and Fr. Proeschner (*Jour. Am. Med. Assn.*, 1907, Dec. 14).—The discovery of spirochaetes in the tissues of cases of Hodgkin's disease, and of acute lymphatic leukaemia and chronic benign lymphomatosis, was reported in this JOURNAL last year. The coincidence of this finding in different pathologic conditions in a tissue, about the pathologic processes of which, as yet, great confusion obtains, the clinical character of these processes, in many cases suggesting an infectious origin, was the factor that, from the beginning, suggested that the finding of these authors was not an accidental occurrence, but had an etiologic meaning. In their last paper, forming only a preliminary announcement of following detailed description, they give to the group of acute and chronic lymphatic leukaemia, Hodgkin's disease, chronic, benign lymphomatosis and lymphosarcomatosis, including chloroma and myeloma, the character of a primary lymphatic spirillosis. From a case macroscopically presenting the picture of tuberculosis, they injected, for diagnostic purposes, small fragments of the glands into a guinea pig. Microscopically, the finding was that of a lymphosarcoma. The animals showed no tuberculosis. After two months they showed greatly enlarged inguinal glands, and at the point of inoculation an ulcer. In the tissues, the microscopic structure was that of lymphoma with sarcoma foci, and immense numbers of spirochaetes were found in them. Other guinea pigs and rats inoculated from this animal developed the same lesions. The ulcerations had the character of specific lesions, the enlargement of the glands was noticed on the 8th day after the inoculation. It appears that the work of the authors has opened a field that may overthrow many pathologic conceptions of tumor formation in lymphatic tissue, and at the same time contribute to establishing a clear idea of the character of the pathologic lymphatic processes, that in their transitions from one to the other have up to now remained an obscure problem.

ON THE SIMILARITY BETWEEN BLOOD-PLATELETS AND CERTAIN HEMATOZOA.—Leroy D. Swingle (*The Jour. of Infec. Diseases*, Vol. 5, No. 1).—The work of Swingle is liable to throw doubt on many statements made by different observers on changes of hematozoa in the second host. For his studies he used the blood of sheep and, dealing with it as with cultures, he saw blood platelets change into forms not distinguishable from protozoal forms, with motion and flagellation; he obtained pictures that were in all points identical, for instance, with stages of piroplasma,

found by Koch and others in the tick. Even close to the double nuclear apparatus of these organisms the platelets showed the identical structure. The author has found that a "cultivation" of blood of a sheep and of other animals in a citrate of sodium and sodium chloride solution, shows always a protozoal change of the blood platelets. The pictures he gives are convincing and would suggest to an unprejudiced observer the character of protozoic structures. It really appears unlikely that structures found in the stomach and intestines of host insects of various human and animal protozoic infections should, without thorough critic on account of the ignorance of these changes in blood platelets, be taken for the mere post hoc propter hoc as expressive of a cycle of development of the infecting parasite. The author's observations, if confirmed, will necessitate a thorough revision of many theories and statements now current of the life cycle of protozoic parasites. The paper is an addition to Novy's work, who demonstrated that gross mistakes in following the life cycle of a protozoan through the second host can be made by not knowing that very similar parasites may continuously inhabit the intestinal tract. Swingle's work has again shown how difficult the work on protozoal life is, and how easily a mistake can be made by mere similarity and comparison.

DIAGNOSIS.

IN CHARGE OF
ALBERT E. TAUSSIG, M. D.

THE OPHTHALMOREACTION TO TUBERCULIN.—S. Cohn (*Berl. klin. Wochenschr.*, 1907, No. 47).—Cohn has obtained some interesting results with Calmette's conjunctival reaction to tuberculin, the development and technique of which is discussed in the last issue of this journal. Of 192 cases in which there was no reason to suspect tuberculosis, only 12 reacted positively. Of these last, 8 were cases of typhoid or paratyphoid fever and indeed of all the cases of typhoid fever so tested, two-thirds reacted positively. He suggests the possibility that typhoid patients as a class may be hypersensitive to tuberculin and that therefore the test may be inapplicable to them. Of 86 cases of tuberculosis, 23 failed to respond to the test, but of these all but three were in the terminal stage of the disease. It is well known that such patients ordinarily fail to react to tuberculin. Of 32 suspicious cases, 6 failed to respond and in most of these the hypodermic injection of tuberculin also failed to produce a reaction. His most important observation is concerned with the repetition of the test in the other eye. He instilled a drop of 1 per cent tuberculin into one eye and if no reaction appeared repeated the procedure after a sufficient interval with the other eye. In the non-tuberculous cases, the second test, too, was negative, whereas tuberculous patients almost always responded, the single exception being moribund. When, however, instead of being done with the other eye, the test was repeated with the same eye, practically every one responded positively. His conclusions are as follows:

1. With a 1 per cent tuberculin solution a positive conjunctival reaction speaks with very great probability for the presence of tuberculosis.

2. A negative reaction does not absolutely disprove tuberculosis, since half of all advanced cases of phthisis fail to react. Mild and moderately severe cases of phthisis rarely fail to respond.

3. Typhoid patients often react positively, especially during convalescence.

4. A hypodermic injection of tuberculin made some time after the conjunctival test may cause the local reaction in the eye to reappear or may cause a positive conjunctival reaction when the latter originally was negative.

5. The instillation of dilute tuberculin into one eye produces a hypersensitiveness of that eye to tuberculin in non-tuberculous adults. In tuberculous individuals, this hypersensitiveness usually extends to the other eye.

CUTANEOUS VASCULAR DILATATION IN THE DIAGNOSIS OF INCIPIENT PHTHISIS.—Francke (*Muench. med. Wochenschr.*, 1907, No. 46).—In about one-fourth of all of his cases of early pulmonary tuberculosis, Francke found fine red lines, evidently due to vascular dilatation, in the skin over the affected apex. He interprets them as the cutaneous expression of localized tuberculous pleurisy and considers them as pathognomonic for the existence of a tuberculous process located in the peripheral portion of the pulmonary apex. The color, shape and number of these dilated streaks permit certain inferences regarding the age and the intensity of the infection.

KERNIG'S SIGN IN MENINGITIS.—Kernig (*Zeitschr. f. klin. Med.*, LXIV., Nos. 1 and 2).—Some 24 years ago, Kernig first called attention to his now well known sign in meningitis. Since that time he has tested thousands of cases of meningitis and of other diseases for the presence of this sign, with instructive results. In 208 cases of acute meningitis, 87 per cent showed the sign; the same was true in 94 per cent of his cases of epidemic cerebrospinal meningitis and in 91 per cent of tuberculous meningitis. On the whole, the more severe the infection, the earlier the sign appears. In other diseases, the appearance of the sign indicates an involvement of the meninges. Thus in a case of typhoid fever with positive Kernig's sign, the autopsy revealed a chronic leptomeningitis, and in a case of lumbar spondylitis, a spinal meningitis. It is less constant in children than in adults and cannot be elicited when paralysis sets in, but may reappear when the paralysis subsides. A negative test does not exclude meningitis, but a positive one indicates meningeal involvement with great certainty.

THE DETERMINATION OF THE RIGHT BORDER OF THE STOMACH.—Sieving (*Arch. f. Verdauungs-Krankh.*, XIII., No. 4).—In determining the outline of the stomach after inflation, the chief stress is ordinarily laid upon the position of the upper and lower borders, the sinking of the latter below the level of the umbilicus, while the former remains normal, being usually considered indicative of gastric atony and often related to motor insufficiency. Sieving, however, considers the determination of the right border of much greater diagnostic importance. The enlargement of the stomach to the right is, he believes, the earliest sign of motor insufficiency, and may be observed when only the pyloric portion is affected. At this time the lower border of the stomach still maintains its normal position. In health, the right margin of the stomach is situated some 6 cm. to the right of the median line, whereas in be-

ginning motor insufficiency the right border is some 9 cm. from the median line. In more advanced cases, where the lower border of the organ has fallen below the level of the umbilicus the right margin may be more than 9 cm. from the median line. In determining the gastric outlines, excessive inflation must of course be avoided.

THERAPEUTICS.

IN CHARGE OF
WM. ENGELBACH, M. D.

THE OPERATIVE TREATMENT OF PULMONARY TUBERCULOSIS.—Babcock (*New York Medical Journal*, November 16, 1907) referred to the failures attendant upon the operative treatment of tuberculosis of the lungs, and pointed out that the type of operations heretofore employed had been the same as those that had proved ineffective against tuberculosis of other organs. More thorough operative measures, with precautions to avoid any additional infection, might prove as valuable in the treatment of pulmonary tuberculosis as they had in treating tuberculosis of the kidney and other organs. The excision of entire lobes of the lung, and probably of all of one lung, Babcock maintained, was feasible through properly planned posterior incisions giving access to the root of the lung. Operative treatment was to be considered in selected cases in which hygienic and medicinal treatment proved adequate to arrest the progress of the disease, but impotent to overcome localized massive lesions which had already formed. In the case reported the left lung was almost free from disease, but there was a moderate miliary involvement of the right upper lobe, with massive caseation of the entire lower right lobe. Two months' open air treatment proved the patient's ability to overcome the lesser lesions, but death was inevitable from the condition of the right lower lobe. The lower lobe of the right lung, weighing 770 grammes, was therefore excised, the hæmorrhage being controlled by ligation of the vessels of the base of the lung, and the bronchus occluded by a flap of pulmonary tissue sutured over its lumen. The man's cough ceased, and nine days after the operation he was able to be out of bed. On the night of the tenth day he was left out of doors in a rain storm, through the carelessness of an attendant, and was seized with pulmonary edema, to which he succumbed on the fourteenth day. The portion of right lung remaining in the body was atelectatic and weighed 320 grammes, showing that life was maintained after the operation almost entirely by the left lung. This experience convinced the author of the feasibility of massive resection up to the removal of an entire lung. In a second case the patient greatly improved after a pneumotomy for large tuberculous abscess. To overcome the effects of the pneumothorax a new vacuum shield, designed to be placed over the chest wound during the operation for the reduction of intrathoracic pressure, was demonstrated. After extensive resections, if feasible, the pleural cavity should be closed under negative pressure. The divided bronchi could be occluded best by covering them with flaps of tissue. All portions of ribs should be removed from the flap in the chest wall and primary drainage of the pleural cavity avoided.

NEURASTHENIA AND CHRONIC SUPRARENAL INSUFFICIENCY.—Schneider (*Revue de Médecine*, October, 1907) dwells upon the importance of careful examination of the various neurasthenics in trying to reach a diagnosis. Certain facts have recently been brought forward which suggest that lesions of the suprarenal glands may produce the phenomena which are common in neurasthenia. In its acute forms suprarenal insufficiency may take the form of pseudoperitonitis with sudden death, pseudotoxemia, pseudomeningitis, or pseudotyphoid fever, the diagnosis resting principally upon the two symptoms, asthenia and vascular hypotension. In the subacute and chronic forms there have been few reported cases, excepting those of E. Sargent and L. Bernard. In the paper by these authors the following symptoms are mentioned: 1. Circulatory troubles, including chilliness, small and unstable pulse, arterial hypotension, tachycardia, collapse, syncope. 2. Digestive troubles, including anorexia, vomiting, diarrhœa, and peritoneal symptoms. 3. Nervotoxic troubles, including encephalopathy, headache, excitement, delirium, convulsions, depression, coma, asthenia, and acute pains. 4. Hypothermia, anemia, emaciation and cachexia, and cadaveric odor.

ESSENCE OF CINNAMON AGAINST THE GRIP.—Ross (*La Semaine Médicale*, November, 1907).—Grip, even moderately severe in character, is a disease giving rise to hyperthermia, which usually lasts from four to eight days, and to asthenia, which extends over a still longer period. According to the author, this phase of pyrexia and asthenia may be considerably reduced by the timely administration of the essence of cinnamon. The prescription should specify a preparation from cinnamon bark, the leaves being very much less efficient. The remedy is employed as follows: Begin by taking 12 drops of essence of cinnamon in a water or wine glassful of water, another and a third dose of 12 drops to be taken with an hour's interval between doses. Two hours after the last dose take 10 drops, and continue every two hours without interruption until the temperature has returned to normal. When apyrexia manifests itself it suffices to administer 10 drops three times daily in the next following 24 or 48 hours. When the disease is treated in this manner from the onset, namely, in the first three or four hours, the essence of cinnamon, so to say, aborts the hyperthermia in the space of 12 hours. If the treatment is instituted at a later stage, the temperature becomes normal only at the end of 24 to 30 hours. Under the influence of this medication the asthenia is modified to such a degree that the patient may, if necessary, go out and attend to his business from the second or third day of the treatment. However, it is preferable to wait until there have been two or three days of complete apyrexia.

DISINFECTION IN DIPHTHERIA.—The modern method of handling infectious material from diphtheria, the disinfection of comparatively harmless fomites while paying little or no attention to the virulent bacilli often carried about by those who have been in contact with the patients or by the patients themselves during convalescence, is criticised by M. Solis-Cohen (*Journal American Medical Association*). He uses the term latent diphtheria for those cases without pseudomembrane, but due to the specific diphtheria organisms. Twenty-seven cases are reported briefly, in nearly all of which presumed diphtheria germs were demonstrated, mostly by culture method. Mild atypical cases, he claims, are exceedingly common, frequently giving only the clinical picture of slight tonsillitis or pharyngitis, and even without any constitutional disturbance

whatever. These latent cases are largely responsible for outbreaks and epidemics of diphtheria; they are just as contagious as the acute membranous type and call for the same precaution. Tonsillitis and pharyngitis should be included therefore in the notifiable diseases, and at least two negative throat cultures be obtained before any patient in whose throat virulent bacilli have been found shall be allowed to go at large. While there is a disagreement of authorities as to the distinction between the diphtheria and pseudodiphtheria bacilli, the error, if any, should be on the safe side. Nevertheless, Solis-Cohen thinks that the health authorities may properly disregard the presence of diphtheria-like bacilli in the throats of healthy persons who have not been in direct or indirect contact with a case of diphtheria, membranous or latent, and who have not themselves suffered from sore throat. Otherwise they should, in his opinion, be subjected to same restrictions as infected contacts residing in the same house with a diphtheria patient, i. e., be excluded from school or work and not permitted to frequent public places until two successive cultures have proved negative. Every one who has been in contact with the patient, whether at home, at school or at work, should be examined bacteriologically. Disinfection of fomites and terminal disinfection of rooms and their contents is insufficient and reliance thereon treacherous. Animate carriers of infection are much more dangerous than the inanimate. He would not dispense with terminal disinfection, but would postpone it until after all the members of the household have been examined bacteriologically and found free from germs.

A NEW LIVER FERMENT.—Leyden and Burgell (*Deut. Med. Woch.*) describe experiments on a new ferment extracted from liver juice, which appears to have a selective action in producing lysis of cancer cells. In regard to the selective action of various agencies influencing the cells of malignant tumors, they say that the effect of radiation with the Roentgen rays involves very slight selective action, the injection of radioactive substances is accompanied by a temporary and non-progressive action, and in paeceatin action the selective property is very incomplete. Although the selective action of the liver ferment is pronounced, there seems but little prospect of being able to make use of it therapeutically owing to the uncontrollable nature of its action. It is suggested that the unrestrained growth of malignant tumors depends on a deficiency of the body in a lytic property that probably is specific. That is, the healthy individual possesses a ferment-like body which is absent or is not present in sufficient amount in the carcinomatous organism.

SURGERY.

IN CHARGE OF
MALVERN B. CLOPTON, M. D.

THE PRACTICAL APPLICATION OF LOCAL ANESTHESIA IN FRACTURES.—(*Lerda, Zentralb. f. Chir.*, 1907, No. 49).—The use of the local injection of cocain between the ends of fractured bones was first suggested, in 1885 by Conway, and more recently advocated by Reclus; the latter first used it to allay pain in a patient being transported to the hospital. Braun has advised its use in fractures of the skull, collar bone and rib. The advantages over general anesthesia (which most of the

cases are not prepared to take), are that it relieves the pain, while reducing the fracture, and is not accompanied by the excitement of the general anesthesia, so that retaining dressings can be put on without fear of displacement from excessive muscular activity at the time of dressing, or later. A syringe armed with a long, strong needle is used to inject the cocain between the fragments and tangential to the break. A 1 per cent cocain in normal salt solution with adrenalin is used. Stovain and alypin have been tried but much larger injections have to be made than with cocain. The adrenalin prevents, in part, the formation of hematoma. Five to eight cubic centimeters of the solution are injected. Relief begins shortly and in ten minutes the fracture can be painlessly manipulated, with no muscular spasm; in fact just as well as if under general narcosis. It is applicable to most fractures. Those mentioned by the author are Colles' fractures and other fractures of the forearm, elbow fractures, fractures of the lower leg and as is particularly mentioned, supra-malleolar fractures, where it has always been contended that general anesthesia is essential. Nose breaks can be painlessly and esthetically manipulated and reduced.

SPINAL CORD PARALYSIS.—Krause (*Arch. f. Clin. Chir.*, Bd. 84, hft. 2).

—In order to help in a finer differentiation of the causes of paralysis from localizable pressure on the cord, Krause reports six cases he operated on in a series of 22 in which a diagnosis of tumor of the cord had been made, but when laminectomy was performed proved to be a localized collection of cerebrospinal fluid under great pressure. The first case was in a man with a tuberculous kyphosis of the dorsal region and a history of syphilis several years before. The diagnosis of a spinal tumor was made on account of the excruciating girdle pains in the right chest, which did not cease under strong antisyphilitic treatment. The case at this time was in the hands of another surgeon who exposed the dura at the second and third dorsal segment, but did not open it because he could feel no growth beneath, and closed the wound after dividing the posterior nerve roots. There was little or no improvement and after five years the patient returned for another operation. The dura was exposed from the first to the fourth dorsal, which showed as a tightly-stretched membrane. After opening the dura the cerebrospinal fluid came out in great quantity, enough to fill the wound two or three times. It was clear and normal, the arachnoid was oedematous, and a few adhesions seemed to limit the distended dural sac above and below. The wound was closed with a small drain coming from the dura into the muscle. After the operation the improvement came shortly, pain left and reflexes became normal. The case is regarded as a chronic inflammatory process of meninges in which the increased fluid was held localized.

The second case was a 35 year old man who had tuberculosis of the lung seven years before, with a more recent development of the Brown-Sequard paralysis. The trouble began over a year before with formication over the left foot and leg, and in a week involved the whole leg and the left lower part of the abdomen, the bladder pained and pain came in the left half of the penis and scrotum. After some months the pain went to the right leg; a little later the right shoulder blade and arm became involved. At the time of operation there was a spastic paralysis of the right leg with Babinski and Oppenheim reflex. On the left leg and up to the sixth left rib there was hypalgesia and thermhypesthesia. On the right back from the fifth rib down, tactile and pain sense lost. The provisional diagnosis was either extradural tumor of third dorsal vertebra, or caries

of spine with pressure from behind and on the right side. At the operation the 6 cm. of the dura were exposed in the upper dorsal region; it was much distended and did not pulsate. On opening the dura a large amount of clear spinal fluid came out, and adhesions were shown between the cord and arachnoid. The diagnosis of adhesive arachnoiditis with increase of cerebrospinal fluid, was made. The patient died shortly after the operation.

Another case in a woman of 60 years, who had symptoms of compression of the cord (paralysis of the bladder and paraplegia) which had lasted for three months. There was a swelling over the lumbar spines, which on opening was shown as a tuberculous abscess which had arisen from the spinous and transverse processes of the third and fourth lumbar vertebrae. These were removed and cleared away to expose the canal, which did not contain pus or granulation tissue, but above was seen a much distended dura, which contained clear cerebrospinal fluid under tension. This was not opened, but with the healing of the abscess the patient made such improvement that she was able to be about.

A case is related, in a 53 year old woman, diagnosticated tumor of cord at the 8th cervical segment by Oppenheim and Palczek. The Brown-Sequard paralysis was not fully developed. The operation disclosed a much distended dura full of spinal fluid with some adhesions. The wound did not heal entirely, but for 18 months discharged cerebrospinal fluid. However the paralysis disappeared.

Another case reported is a man of 50 years, who for two months had a severe attack of pain in the groin with later an involvement of the lumbo-sacral nerves and a loss of tendon reflexes of the lower extremities. The canal was opened in the lumbar region and an exostosis of the lamina of the 4th lumbar vertebra was found pressing on the cauda, while above this the dura was very tense and filled with clear fluid. After the operation of removal of the bone and opening the dura the reflexes were lost below, but sensation perfect. The patient died on the 10th day without any infection having arisen.

To account for the origin of these collections of fluid he takes Henle's description of the arachnoid as a porous, fluid-soaked membrane which permits the free passage of the spinal fluid through it, but should it become, from any cause, an impermiable membrane it dams up these localized collections, which, in the brain, cause cysts, but in the spinal canal cause collections which may extend over an area measured by several vertebrae.

The etiology of this condition is usually found in an infectious process in the neighborhood of the dura, or it may be due to gout, as in one of the cases, or to syphilis as reported in two of the patients.

Lumbar puncture for diagnosis is not indicated. A case is recited of a youth, who had a fall with a cervical contusion, that later gave symptoms of compression of the cord. A lumbar puncture was negative, but at operation the cord was found compressed by this "meningitis serosa spinalis," it was opened, but at that time no fluid came from below though some escaped from the upper part of the cord.

While puncture of the subarachnoid space in the region of the compression might be easy, the diagnosis is not complete should fluid in large amounts come from the needle, because in all cases of tumor of the cord that Krause has operated on he found a general increase of fluid with distension. In order that the tumor should not be missed a laminectomy must be made.

PEDIATRICS.

IN CHARGE OF
ALFRED FRIEDLANDER, M. D.

TREATMENT OF INFLUENZA IN CHILDREN.—Breton (*Rev. Mens. des Mal. de L'Enf.*, November, 1907), discussing an epidemic of influenza in children, makes the following suggestions, with reference to treatment:

During epidemics, the isolation of grippe patients is recommended, even of convalescents. Disinfection of the rooms is of value. Even with many patients ill in one family their separation is advisable; because some cases run a much simpler course than others. Great care is to be exercised concerning the first outing of these patients. There is special danger not only of relapses of the influenza but of certain sequelæ, of which pulmonary congestion is the most common. For the gastro-intestinal troubles, absolute limitation of diet or restriction of all food, save water, is of great value. For the pulmonary troubles, hot packs, mustard sinapisms or hot baths are recommended. The author finds the phosphate of guaiacol of great value in the treatment of influenza, given in doses of four to seven grains per diem, according to age. Convalescence is to be watched very particularly and signs of fresh infection are to be carefully searched for. For the adenopathies, the author finds raw bone marrow of great value.

ALIMENTARY REGIMEN IN SCARLET.—Courdouan (*These de Paris*, 1907) as the result of a series of careful observations, concludes that chloride of sodium does not play as important a role in scarlet as is ordinarily supposed. There is no retention of the chlorides in scarlet, and salt added to the food is without influence on the initial albuminuria, and appears to play no role in the contraction of the later nephritis. The curve of chloride elimination is identical under different dietetic regimens, and the initial albuminuria disappears at about the same time, no matter what the diet. No form of diet can absolutely prevent the occurrence of nephritis. Milk diet is unquestionably insufficient, and causes loss of weight; but in all cases in which the urine cannot be very carefully watched a milk diet should be instituted. So too in all cases of scarlatinal nephritis milk should be the sole diet. Under other circumstances ordinary diet with an ordinary amount of salt, may be used as it is more comfortable for the patient, harmless and prevents undue loss of weight.

NEPHRITIS IN INFANTS.—Carpenter (*Brit. Jour. Children's Diseases*, October, 1907) finds that cases of infantile nephritis are very apt to be overlooked clinically, inasmuch as extensive kidney disease may exist in infancy without dropsy. It is also a peculiarity of infantile nephritic kidneys, whether of syphilitic or simple origin, that they frequently appear normal macroscopically even though they are extensively diseased. Though some cases of infantile nephritis are undoubtedly syphilitic, others are certainly not so, and it is doubtless true that interstitial nephritis may be produced by toxins other than those of congenital syphilis. It is possible that the interstitial nephritis may thus begin in very early life, being due to the presence of intestinal toxins. The combination of parenchymatous and intestinal inflammation is apparently not uncommon in the nephritis of infants.

ACUTE HEMORRHAGIC NEPHRITIS, AFTER MUMPS, IN A SEVEN MONTHS' OLD INFANT.—Jelski (*Arch. f. Kinderheilk.*, Vol. 47, page 164) reports the case of a seven months infant who had a moderately severe parotitis.

Two weeks after the onset it was noticed that there were bloody specks on the diaper. Examination of the urine showed the picture of an acute hemorrhagic nephritis. Despite energetic treatment the child died with a picture of uremia. Careful search of the literature showed the author that the cases of nephritis following mumps in childhood have occurred in older children. It is noteworthy that three other children in the family, who had mumps at the same time, showed no complications.

EMPHYEMA IN NURSINGS.—Douriez (*These de Paris, Arch. Enf.*, November, 1907) shows that purulent pleurisy is not exceptional in nurslings. It is secondary to pulmonary infections. The pneumococcus is the principal agent in the place of the streptococcus, which plays the principal role in the empyema of the newly born. The diagnosis is to be made only by the subjective signs, the most important physical sign being flatness on percussion. Exploratory puncture often establishes the diagnosis and permits a bacteriologic examination. Difficulties in diagnosis arise with reference to the distinction between bronchopneumonia or even lobar pneumonia or pulmonary tuberculosis. The prognosis is always grave; practically always fatal in streptococcal empyema, not quite so bad in the pneumococcus empyema. Treatment should consist at first, in thoracentesis, which may be repeated in the pneumococcus empyema. Rib resection in the nursling, is a distinctly dangerous operation and should not be resorted to unless other means fail.

OPHTHALMOLOGY.

IN CHARGE OF
JOHN GREEN, Jr., M. D.

EXTIRPATION OF THE GASSERIAN GANGLION AND NEURO-PARALYTIC KERATITIS IN MAN.—Weiss (*Klin. Monatsbl. f. Augenh.*, August-September, 1907).—Four years after extirpation of the left Gasserian ganglion, Weiss's patient suffered from excessive sweating of the face, especially on the right side, occasional pains in the left eye, and want of sensation in the left conjunctiva and left side of the mouth. The distribution of the left fifth nerve was anesthetic. There was slight drooping of the left upper lid and fine fibrillary tremor of the left orbicularis. The left cornea was absolutely insensitive, but transparent and showed no trace of old inflammation. Although in the course of his work the patient's eyes were exposed to the risks of dust and other foreign bodies, the anesthetic cornea had remained free from inflammation.

The author rejects the "trophic" theory of Magendie as well as the newer "trophic" theory which attributes the lesion of the cornea to paralysis of sympathetic fibres which have joined the fifth nerve and which undoubtedly are liable to be involved along with the latter. He believes that drying of the cornea from insufficient covering combined

with the occurrence of small injuries which provide a point of attack for pathogenic organisms are enough to account for all cases of keratitis resulting from extirpation of the Gasserian ganglion. That keratitis occurs so seldom in these cases is due to the fact that the activity of the reflexes in the healthy eye insures the continuance of winking movements and of secretion of tears in the affected eye.

The author believes that the operation for removal of the ganglion can never be contraindicated by the danger of keratitis.

THE ETIOLOGY OF OPHTHALMIA NEONATORUM.—J. Wharton (*Ophthalmic Review*, November-December, 1907).—From an investigation of 100 cases the author reaches the following conclusions respecting the etiology of ophthalmia neonatorum: (1) The majority of the cases (75 per cent in the author's series) result from an infection with the gonococcus and the inflammation is usually severe. Other organisms, notably the pneumococcus, may cause a milder form of inflammation. (2) The source of infection is usually an abnormal secretion present in the vaginal tract of the mother. Especially is this the case among infants with gonorrhœal ophthalmia, for leucorrhœa is frequently gonorrhœal in origin. (3) The absence of a vaginal discharge, a leucorrhœa, does not necessarily indicate the absence of gonorrhœa. A gonorrhœal conjunctivitis may appear in the offspring of a mother who "thinks" she is quite healthy. The mother's history, certainly among the poorer classes, must not be relied upon, and a rigid prophylaxis should be observed in every confinement. (4) Infection may arise as a result of an inoculation of the conjunctival sac with sputum, filth, etc.

CONTRIBUTION TO THE ETIOLOGY OF TRACHOMA.—Halberstaedter and Browazek (*Deut. Med. Woch.*, 1907, p. 1285).—The authors found (while engaged in investigations on trachoma in Java) mostly in the neighborhood of the nucleus of epithelial cells of the trachomatous conjunctiva, round or oval, not perfectly homogeneous, masses staining blue or violet with Giemsa, and in these sharply defined, very fine corpuscles, staining red when free, violet when covered by the blue masses. At later stages the corpuscles divide like cocci and present pictures similar to diplococci. The authors consider the corpuscles as parasites, the blue staining masses as products of reaction of the cells, caused by the entrance of the virus, for the following reasons: (1) They were always seen under the microscope in the same distinct characteristic manner and showed lively movements. (2) They could be inoculated on the conjunctiva of anthropoid apes, in the epithelia of which they were found in great masses, and could be further propagated from ape to ape. Inoculations on other animals were negative. According to the authors, these microorganisms may have an etiologic connection with trachoma and may, together with the morbid agents of variola, vaccine, scarlet fever, chicken-pox, icterus of the silkworm, and perhaps the pox of carps, belong to a group for which they propose the name "chlamydozoa."

The corpuscles correspond with those found by R. Greef and Frosch.

A NEW PROCEDURE FOR TREATING A PROLAPSE OF THE IRIS COMPLICATING PENETRATING WOUNDS OF THE CORNEA.—Heckel (*Penn. Med. Jour.*, August, 1907).—The writer uses a solution of eserin sulphate one grain to the ounce before removing a prolapsed iris. After cutting the iris tissue close to the cornea, he passes a small horn spatula into the corneal wound, permitting the iris, aided by the miotic action of the eserin, to withdraw into the anterior chamber. After twenty-four to

forty-eight hours he uses atropin. He adopted this procedure as a result of his observations that mydriatics will not dilate a pupil when there is an open or leaking anterior chamber, and thus draw the iris away from the wound, while miotics will act with an open corneal wound.

DERMATOLOGY AND SYPHILIS.

IN CHARGE OF
J. J. HOUWINK, M. D.

BASALZELLENKREBS.—P. Clairmant (*Archiv. für Klinische Chirurgie*, October 19, 1907).—Carcinomas developing from the basal or deepest layer of the epidermis retain the characteristics of the columnar cells of this layer. They have no tendency to horny changes like the carcinomas developing from the prickle cell layer. They are curable by X-ray treatment, while the horny carcinomas are not affected by Roentgen. Microscopical diagnosis should therefore be made before deciding upon treatment. However, the clinical appearance of these carcinomas is quite typical. They form sharply circumscribed tumors of irregular outline raised above the level of the surrounding skin. The surface is only partially ulcerating, if at all, the rest being covered with a fine skin in which small vessels can be seen. If there is extensive ulceration, the ulcerating part will be found lower than the rest of the tumor, but never presents a crater-like appearance. The ulceration is always irregular with a papillary surface. The borders of the tumor are yellowish-red or yellowish and transparent. Bleeding occurs easily, the secretion is more serous than purulent. The lymph glands are not enlarged. A clinical diagnosis can therefore most often be made.

NOUVELLES NOTES SUR L'ATOXYL.—Hallepeau (*Bull. de la Société Française de Dermatologie et Syphiligraphie*, November 7, 1907).—Hallepeau reports a case of syphilis treated only with atoxyl. The patient, a student of pharmacy, 22 years old, contracted a leucic chancre on the twelfth day of May, 1907, which made its appearance on the internal side of the prepuce. As soon as the diagnosis was certain, patient took 250 milligrams of atoxyl daily for one week, and the next week the same dose every other day. The chancre disappeared entirely during this treatment, leaving a smooth scar. Patient stopped every treatment, still he was watched very carefully. After four months, on the twelfth day of September a macular eruption appeared all over the body and some mucous patches in the mouth. Patient took for five days the same dose of atoxyl, under which treatment every symptom of lues disappeared. Lately a mucous patch appeared on the pillar of the soft palate, disappearing after four doses of atoxyl. No bad effects of the medicine were noticed. Hallepeau concludes from this case that atoxyl has a powerful action on the spirochætae and that, when given in high doses, the manifestations of the disease are retarded and easily made to disappear.

THE STAINING METHOD FOR SPIROCHETÆ IN SECTIONS.—F. Proescher and W. C. White (*Jour. A. M. A.*, December 14, 1907).—A rapid method to stain spirochætæ in sections, giving clearer and more constant

results, is described in this paper. As the silver method is a very lengthy one, the method of the writers may be considered as having some advantages. Their procedure is as follows:

1. Harden in alcohol or formalin.
2. Embed in paraffin; cut in usual way or make frozen sections.
3. Stain in picric acid and acid fuchsin solution 10 minutes (saturated aqueous picric acid solution 99 c.c. and saturated aqueous acid fuchsin solution, 1 c.c.).
4. Differentiate in 20% solution of picric acid in 96% alcohol, 5-10 minutes.
5. Dry with filter paper on slide.
6. Clear in xylol.
7. Mount in Canada balsam.

The spirochætæ are stained deep red. The other tissue, except the fibrous tissue and reticulum, is stained yellow. Fibrous tissue and reticulum are stained red, but not such a deep red as the spirochætæ.

The method may be used for rapid diagnosis of spirochætæ in fresh tissue, the whole operation requiring not more than twenty minutes if the tissue be hardened in hot formalin solution and frozen sections be made.

FROST-BITE, TREATED BY ARTIFICIAL HYPERÆMIA.—Ritter (*Archives of the Roentgen Ray*, November, 1907).—Remedies against frost-bite are like the sand on the seashore, which means that the remedies go for the most part for nothing. The old theory was that the hyperæmia which is found in frost-bite acts injurious, being practically the first stage of inflammation. Accidently Ritter treated a boy suffering from frost-bite and tuberculosis of the hand with Bier's stauungs-hyperæmia and noticed that the frost-bite improved rapidly under this treatment. Since then he treated over 150 cases of frost-bite with Bier's hyperæmia, mostly with "obstruction hyperæmia" by means of a ligature, but in case of anemic patients with active hyperæmia produced by heat to the part treated.

Every one of his cases showed rapid improvement and cure in a short time. He concludes from the results of this treatment, that the hyperæmia in frost-bite is not harmful and not a direct result of cold. The object of the hyperæmia is to protect the tissues injured by frost with a greater supply of blood, and to promote regeneration of the part. Accordingly, it is of service to increase this natural means of cure on the part of the body itself in cases of frost-bite.

Regarding the technique, Ritter recommends a hyperæmia of six to twelve hours per day. Best of all is hyperæmia produced by strong heat, causing edema. Heat is best applied by means of a hot air apparatus and of most benefit in chronic cases. The frozen parts are first rendered bright red, then they become deep blue-red and often blackish blue. A moist dressing assists the action of the hyperæmia greatly.

CORRESPONDENCE.

LONDON LETTER.

(FROM OUR OWN CORRESPONDENT.)

One of the burning questions of the hour centers upon the "brown dog" of Battersea. This is really due to one of the pleasing methods adopted by the anti-vivisectionists to give effect to their peculiar views. One or other of the societies—for we are happy in the possession of some three or four separate organizations whose tribal warfare even their common object cannot abate to any extent—erected last year in Battersea Park a statue with an inscription to the effect that it is "in memory of the brown terrier dog done to death in the laboratories of University College in February, after having endured vivisection extending over more than two months." In the light of the facts elicited at the trial in which the original allegator of this statement was cast in heavy damages, this inscription can only be described as lying and distinctly provocative of a breach of the peace. The students of University College in their wrath have vowed destruction to the offensive insult, and in the unreasoning fervor of youth attempted to take the law into their own hands, but were foiled. The magistrate before whom they were arraigned took the opportunity to gain some cheap applause at their expense in the columns of the "gutter press," and this naturally has not tended to allay the inflammatory condition of things. The upshot of the matter will be that action will be taken by the representative in Parliament for the University of London, Sir Philip Magnus, to get the objectionable inscription removed, unless in the meantime the municipal authorities of Battersea, in whose charge the spiteful production was placed, see fit to do so themselves, and save the expense of a special night and day watch over a tempting cock-shy.

The President of the Board of Education has issued a memorandum to the various local authorities dealing with the Act coming into force with the new year which secures the medical inspection of children attending the public elementary schools. Mr. McKenna has decided against the establishment of a separate and special department, pointing out that, as the work is an integral factor in the health of the nation, it must be carried out under the direct supervision of the medical officer of health. This will have somewhat far-reaching effects, as it will in the first place wake up the local authorities in some parts of the country to a sense, till now neglected, of their proper duties as regards public health; it will eventually bring about a removal, much to be desired, of the medical officers of health from the conflicting calls of private practice, for with the best will in the world, the temper of an angel, and the tact of a skilled diplomatist, it will be impossible for a medical officer of health who is also engaged in private practice so to order his new duties of school inspection without involving himself in continual false positions; finally the combination of duties must and will undoubtedly make the public health medical service a government appointment, and thus free the holders from the whimsies and prejudices of local bodies. The memorandum has already been labeled as socialistic; if by that is meant merely a development of sane and sober collectivism there is no harm in the term, but the word has, quite unjustly, come to bear rather an evil reputation, albeit the medical profession is itself directly responsible for initiating the collectivist method of dealing with public health questions.

An important discussion took place in the General Medical Council on the subject of dealing the practice of medicine and surgery by unqualified persons. There is no doubt that further powers are urgently needed in order to cope with the present abuses, which not only affect the interests of duly qualified men, but directly concern the lives and health of the public itself. A committee has been appointed to collect information bearing upon the point from foreign countries and to consider what steps can be taken to procure effective legislation. It is to be feared, as the President pointed out, that not much can be hoped for from the Legislature to improve matters. Perhaps some day we may be able, as a profession, to present as united a front as our legal brethren; then something will be done.

The Annual Meeting of the Fellows and Members of the Royal College of Surgeons of England differed somewhat from previous gatherings of the same sort, in that the Council had to say something to justify its attitude of silent opposition to the resolution passed with monotonous regularity at each meeting for some years past, in which the Members demand representation on the governing body of the College. This body, the Council, is entirely composed of Fellows, so that the Members, though by far the more numerous, have no voice whatever in the management of affairs. As a sop to Cerberus the Council has decided to submit for the consideration of the Members the question as to whether women should be admitted to the College examinations. This is a very wily move, for the subject is capable of provoking torrents of eloquence, more or less, on either side which will haply postpone any definite decision for some time to come.

It is very gratifying to all those who have been supporting Mr. Haffkine in his tussle with the Indian Government to know that he has succeeded. In the letter he has received from Mr. John Morley, the Secretary of State for India recognizes that an important body of scientific opinion is favorable to him and offers him on honorable terms renewed employment under the Indian Government. Mr. Haffkine has accepted this offer and proceeds to India as soon as possible to take up again his important work of bacteriologic research—work which in India is even of greater importance than in other parts of the world. It may be remembered that the original trouble, known as the Mulkowal disaster, was the occurrence of fatal tetanus following the use of Haffkine's anti-plague serum which had been prepared at the laboratory under Haffkine's immediate superintendence. There was every reason for supposing that the contamination of the serum had taken place subsequent to issue from the laboratory; nevertheless an official inquiry laid the blame on the laboratory. The result was Haffkine's dismissal and a storm of indignation arose in consequence. As has already been pointed out, the matter has been settled most satisfactorily and the Indian Government is to be congratulated upon regaining the services of so eminent and so indefatigable a worker.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

The phenomena which it is customary to group under the name of occultism have been kept, by the majority of savants, altogether too long in a state of systematic suspicion, so that the consequence has been a mystification of the phenomena and a retarding in the progress of their study. At the present time, it would be wrong to ignore completely

these phenomena, though that has been the idea until now. Since 1847, when at Hydesville, N. Y., certain singular facts were noted from which was evolved the study of spiritualism, many researchers, savants of unblemished reputation, have interested themselves in the study of these phenomena, thereby placing them on a scientific basis. Mention of only the prominent investigators, such as Aksakoff, W. Crookes, Pierre Janet, Lombroso, Maxwell, Charles Richet, de Rochas, R. Wallace ought to suffice. Recently one of the most distinguished professors of the University of Montpellier, Dr. J. Grasset, has published a book with the significant title, "Occultism: Its Past and Present Significance." This work may be considered a classical treatise on occult science. In the wake of so good a guide as is this contribution, it is not impossible to adventure on safe ground, and to satisfy, without compunction, the legitimate desire inherent in all of us to get at closer range to those phenomena whose secrets have not as yet been explained by science.

Imprimis, the definition of occultism is of considerable importance. According to M. Grasset, it is a study of facts which do not yet belong to a positive science but are of such a character that they may do so one of these days. To put the matter succinctly: though occult facts are today only in the vestibule of the palace of science, their clamoring may soon effect a crossing of the threshold into the sanctum of scientific facts. Therefore we can say with impunity that at no distant day occult facts will become scientific. And to further this, the object of savants ought to be the complete transformation of mysterious phenomena into facts worthy of a positive science.

Just as astrology and alchemy are today replaced by astronomy and chemistry, certain phenomena which formerly belonged to sorcery, that is to occultism, have definitely been incorporated in the study of the psychoses, hysteria, somnambulism and hypnotism. From the other phenomena, although they are still considered mysterious, the right of a scientific interpretation should not be withheld. Granted that there has always been some sort of recognition of occultism with phenomena which have varied from time to time, the recent work of M. Grasset illustrates the present appreciation of the hitherto mysterious agents.

On account of the large number of persons interested in questions pertaining to occultism, it is difficult to arrive at convincing conclusions, or a just estimate of the weight and value of their criticisms. The reason for this is that it is impossible to reproduce voluntarily occult phenomena similar to methods pursued in connection with laboratory experiments. On the contrary to do this it is necessary to have a subject with the special aptitudes of a medium, and even then when the most favorable conditions are apparently realized, failure sometimes results. The frauds perpetrated by mediums should not be lightly considered, for they occur only too often. But though the fact of the frequency of these frauds is well established, it would be advisable to remember that not all mediums are frauds, or are always intentionally fraudulent, since it is known that certain mediums are not unaware, at times, of their own fraudulent practices. These frauds are, moreover, of two sorts: the sort done consciously and voluntarily, and the sort done unconsciously and involuntarily. We can readily see how errors may occur and how these errors complicate the problem.

In spite of the difficulties which beset the question, the fact that certain phenomena, but lately considered occult, have really been adopted by positive science is sufficient to encourage researchers. But

this should not be overlooked—that following M. Grasset's advice it is all important to draw the line between the study of facts and the discussion of theories. As to spiritualism, it is only a theory which aims to explain the occult phenomena by the intervention of the mind of deceased persons, reincarnated momentarily. But nothing is less demonstrable than this systematic explanation, nothing is more untrue. In every case the spirits should give proof of the proposition which they advance.

Less irrational is the theory of human radiation; and though at present it is not more firmly established than the theory of spiritualism, we are hopeful that some day science will explain the externalization of sensations and movement. In awaiting the explanation of facts that are demonstrable, it is important to establish the reality of these facts and make an analysis of them. The study of phenomena should precede the criticism of hypotheses. So soon as the facts shall be demonstrated, the promulgation of a theory will not be difficult.

The study of occultism should remain absolutely independent of all philosophical and religious doctrines. It is an illusion to believe that occult phenomena are dependent either on an apology for, or a refutation of, one of these doctrines. Researchers therefore need not take the aforementioned doctrines into consideration.

This then should be the mental habit of him who wishes to study and prove the reality of obscure phenomena such as telepathy, premonition, messages from a distance, and materialization; also of those demonstrations which are nearer: mental suggestion, nearby displacements without contact, levitation, rapping and clairvoyance. M. Grasset is of opinion that it is not rationally impossible and not unworthy of savants to engage in the study of these important questions. In fact he is bold to state that it is their duty to study them because before long many of these phenomena will cease to be occult.

January 10th.

OBITER DICTA FROM FOREIGN JOURNALS.

THE PHYSIOGNOMY OF THE SICK.

Prof. Wm. Ebstein in a recent number of the "Umschau" (Frankfort) is the author of a highly interesting article on "The Physiognomy of the Sick." The following excerpt indicates the value of his learned contribution: The question arises, by what means are we to arrive at a proper understanding of the physiognomy of the sick in case the facial expression incident to certain diseases is not in evidence. To decide this question it is necessary, first, to take into consideration the importance and weight of a critical opinion of the facial expression in health. Piderit's attempt to found a scientific system of mimicry and physiognomy—after Lavater's investigations became old-fashioned—is according to Henle, only a succès d'estime.

Various facial expressions obtain among the healthy. We are all cognizant of the following expressions: frightened, worried, pleading, happy, contemptuous, tired, fearful, studious, jovial, grinning, cheerful, wise, smiling, sickly, crafty, laughing, weak, morose, thoughtful, downcast, troubled, diffident, sly, horror-stricken, beatific, egoistic, sensuous, painful, astonished, stupid, agonized, sad, surprised, restless, changed, displeased, intelligent, disturbed and distorted. And there are others. In Proft's "Mimetic Physiognomic Studies," there are excellent photographs which illustrate no fewer than forty-eight different forms of mimetic facial expressions.

May we draw a conclusion from each illustration as to the permanent attributes of a certain individual? The definite answer to this query must be borrowed from the reply given by Henle to his own inclusive question as to how the mimetic facial expression is metamorphosed into a physiognomic one, that is, the process by which the mind acts on the nerves, the nerves on the muscles and the muscles on the superficial parts of the face, whereby permanent facial expressions of a peculiar nature are evolved, and permanent mental attributes may be studied. Henle, remembering the many mistakes in judgment that have been made by careful observers, arrives at the conclusion that to regard the study of physiognomy as a science is rather problematic. We must fully agree with Henle when he insists that instead of speaking of the facial expression of a certain individual, we should speak of its impression on us; in other words, we should inquire as to its somatic causes and not confine ourselves entirely to its physiologic meaning.

To ascertain whether the impression conveyed is the result of a mental process on the part of the individual, a further knowledge is necessary—a knowledge which can only be acquired by a closer acquaintance with the individual.

A generation has passed since these opinions of Henle on the subject of physiognomy were made public. Nevertheless they are today of the

same value as at that time if a consideration of the physiognomy of the sick is undertaken. If we have made greater strides as regards our knowledge of the physiognomy of the sick than as regards the physiognomy of the healthy, the reason for this is due to the fact that we do not limit our data to facial expressions but take into consideration a large number of other important points which have come to us from time immemorial.

It is undeniable that the physiognomy of the sick has always had other lessons for us than the physiognomy of the healthy. The former was never much assistance in the recognition of the psychologic importance of the facial expression, but was a great help in arriving at the thought that a facial expression could be the means of a clearer knowledge, on the part of the investigator, as regards the pathologic condition of the individual, and could be of decided value in making a prognosis as to the outcome of the disease.

While all this is a gain in so far as it is indicative of progress in connection with our understanding of the subject, undesirable errors are often made as the result of studying the connection between physiognomy and the attributes of character. About the most common illustration is the following. Among the masses the popular impression obtains that a fat person is invariably good-natured. If fact an expression of bonhomie seems to be part of this sort of face according to superficial observers. Poets have strengthened this belief—this myth—by many poetical allusions. Heinrich Heine in the "Harzreise" quotes Cervantes' saying: "He was stout, therefore he must have been a good man." Emile Augier in his comedy "La Cigué," says: "Virtue is fat; a bad man shuns food and drink." Cæsar must have regretted his wish: "Let me have men about me that are fat" when he flung "et tu, Brute" at the Roman, who though far from thin, was the ringleader of the mob that put him to death. Even today there is a great deal of truth in what Duncan in "Macbeth," says: "There's no art, to find the mind's construction in the face." Bodenstedt's lines:

In every human face
Lies written clear and plain
The history of a life—its hatred and its love.
And the secrets of the soul
Are brought before our eyes—
But few can read their meaning,
But few can understand,

are only apparently a contradiction to Shakespeare's dictum. In reality, Bodenstedt's poem means that the subject cannot be mastered by everybody; to accomplish its mastery a natural talent combined with industry and many opportunities for study is necessary; otherwise the manifold phases of life cannot be understood.

Without these factors to illuminate the subject the greatest talent will come to naught. Just as occasionally the greatest painters miss out in some of their productions, so do the most thorough students of mankind

deceive themselves when arriving at conclusions. To arrive at the truth, an intimate knowledge of the subject is necessary.

I possess in common with other people the means of ascertaining an individual's character and emotional attributes from his physiognomy; that is, I am influenced by the opinion of his proved and trusty boon companions, who have watched his conduct and actions closely while students at the same gymnasium (high school). Although the designations, gamin-faced and jail-bird physiognomy, are known to many and on account of their daily use awaken among us hopes of a capacity on the part of the multitude as to diagnostic qualities in connection with the study of physiognomy, we know only too well that deep-dyed criminals have decidedly innocent faces; that the worst scoundrel may have the bland facial expression of the child; and that high-principled individuals look for all the world like criminals.

If the face of the healthy being yields but slight indications of his real character, the physiognomy of the sick, on the other hand, teaches a much better lesson. This can be readily understood because the latter is not dependent altogether on the facial expression but is helped and abetted by the changes in the color of the skin, the pallor or suffusion of the complexion, dietary conditions, bodily postures, the general appearance and by the normal functions of the different parts of the body.

Baumgärtner in his profusely illustrated book, "Physiognomy of the Sick," asserts that after studying the illustrations, not only will the student recognize their salient points in other faces but learn the cause of the slightest changes as they occur in the sick. Though this be the keynote of the work, I doubt if it is possible to diagnose a disease off-hand, merely by examining the illustration depicting the patient's facial expression. This is not by any means due, in the majority of cases, to the technical difficulties incident to a faithful representation of the facial changes accompanying disease but, principally, to the impossibility of diagnosing the pathologic changes of the internal organs from the physiognomy as shown in a photograph. In the case of a likeness of an individual afflicted with nervous or mental disease, the difficulty of forming a diagnostic opinion is not so great. An insane person has an unchangeable as well as a typical facial expression.

In Charles Darwin's "The Expression of the Emotions in Man and Animals," the picture of an insane woman is given so that the condition of her hair may be shown. The way of wearing the hair is often so characteristic of the mentally afflicted that the following expression about startling coiffures has become current: "He (or she) wears his hair like a lunatic." In a number of nervous diseases one look at the face of the afflicted individual is all that is necessary to form a correct opinion of the nature of the disease.

HISTORICAL NOTES.

PETER PAAW AND THE ANATOMICAL THEATRE IN LEYDEN.

Peter Paaw, known by the Latin name of Pavius, was born in Amsterdam in 1564. From his earliest youth he applied himself diligently to his studies. In 1580 he was in Leyden, where he acquired an elementary knowledge of medicine under Bontius, John Heurnius and Rembert Dodoneus. Four years later he visited France, dividing his time between Paris and Orleans. In 1587, at the age of twenty-three years, he took the degree of Doctor of Medicine in the University of Rostock, and about this time he began publicly to teach anatomy. Desiring to acquire proficiency in this branch, he travelled into Italy and placed himself at the feet of the renowned Fabricius (of Aquapendens) in Padua. Paaw remained in Padua for three months, being called home by the death of his father. On his return to Holland, Paaw began the practice of medicine. In 1589 he was made Professor of Botany and Anatomy in Leyden and applied himself diligently to these branches for a period of twenty-eight years. He was one of the first men to cultivate these sciences in the University of Leyden. Although the bodies of criminals had been dissected in Holland since 1555 there was not an anatomical theatre in the country. The want was filled by Paaw, who, in 1589, erected a suitable building for the purpose of teaching practical anatomy. It is perhaps worthy of note that the first anatomical theatre in Paris was not built until 1604, although dissections had long been practiced in France.

The subject of this sketch was the author of several works on anatomy and of a treatise on botany, also of a dissertation on the plague. His works bear the following titles:

1—*Primitiae anatomicae de humani corporis ossibus*. Leyden, 1615, in -4; *Ibid*. 1638; Amsterdam, 1633.

2—*Andreae Vesalii epitome anatomica, opus redivivum cui accessere notae ac commentarii Petri Paaw*. Amsterdam, 1616, in -4; *Ibid*. 1633.

3—*Hortus publicus Academiae Lugduno-Batavae, ejus ichnographia, descriptio, usus; addito quas habet stirpium numero et nominibus*. Leyden, 1601, in -12; *Ibid*. 1603, in -8; *Ibid*. 1629, in -8.

4—*Succenturiatus anatomicus, continens commentaria in Hippocratem de capitis vulneribus; addita in aliquot capita libri viii Cornelii Celsi de positu et structura ossium explicatione*. Leyden, 1616, in -4.

5—*De valvula intestini epistolae duae*. Oppenheim, 1619, in -4.

6—*De peste tractatus, cum Henrici Florentii ad singula ejusdem tractatus capita additamentis*. Leyden, 1636, in -12.

In addition to the works mentioned above, some of Paaw's writings appeared in the *Observationes anatomicae selectiores* of Thomas Bartholinus, which was published in 1657. Paaw left a book, *Methodus anatomica*, in manuscript.

Paaw's knowledge of osteology was extensive and his treatise on this subject is well written. To the anatomical description of the bones he has added some medical and surgical observations which make the reading both pleasant and useful. He recognized the bones to which the name of Wormius has been applied. Paaw described them as tiny bones hemmed in by certain sutures.



FIG. 1.—Anatomical Demonstration by Peter Paaw (Pavius) in Leyden in the year 1597. This was the first anatomical theatre erected in Holland. Engraving by Andreas Stog.

Portal¹ states that, among the authors of the seventeenth century, Paaw is one who theorized least but most accurately on the bones. He created a new conception of cranial fractures. Contre-coup, of which most surgeons were ignorant, was well understood by Paaw. He noted a special variety, stating: "I have seen a sad example resulting from a blow following an attack of apoplexy, which carried the patient off after a short time." He states that on opening the head he found the external plate of bone to be sound, and the internal plate fractured in several directions and bristling with splinters.

The early anatomists knew of the frontal sinuses. Paaw has improved upon their descriptions. He also gave an improved account of the Eustachian tube. His observations upon the maxillary sinus, on various articulations, and on ossification of cartilages, are all creditable.

The plates in Paaw's first book are mostly derived from those in the books of Vesalius and Bauhin.

In his dissertation on the valve of the colon, Paaw denied its existence.

The anatomical observations which are printed in connection with the work of Bartholin are deserving of notice. Paaw declares that the spinal cord is movable in its canal as is the brain within the cranium. He observed in a new-born babe a hernia of the brain in the temporal region; and in another subject he noticed a hernia of the cerebellum through the occipital bone. The latter subject had the testicles concealed in the lower abdominal cavity.

In 1598, while dissecting the body of a man, he observed the large pectoral muscle divided into two parts by a tendon.

An illustration of Paaw's anatomical theatre is found in his first book. The engraving was cut in copper by Andreas Stog from a painting by Jacob de Ghein. It is evident that the artist has taken the title-page of Vesalius's anatomy as his model.

The picture (Fig. 1) shows the anatomist at work, surrounded by about fifty men: knights, savants, peasants, and burghers, who can be differentiated by their clothes. Above all stands a skeleton holding a banner which bears this inscription: *Mors ultima linea rerum*.

Paaw's instruction seems to have been so interesting, and the crowds of students so large, that, in a few years a larger amphitheatre became necessary. Fig. 2., an engraving made in 1610 by Woudanus von Swanenburg, shows the Leyden anatomical theatre considerably enlarged and grotesquely ornamented. In place of one human skeleton, eight are here shown, of which six are holding banners with suitable inscriptions. Numerous skeletons of the lower animals are in evidence. In the background is a cabinet of instruments used in dissection. The whole picture suggests a room which combines a museum and an anatomical theatre.

¹Portal: *Historie de l'Anatomie et de la Chirurgie*, Paris, 1770, Vol. II., pages 398, 399.

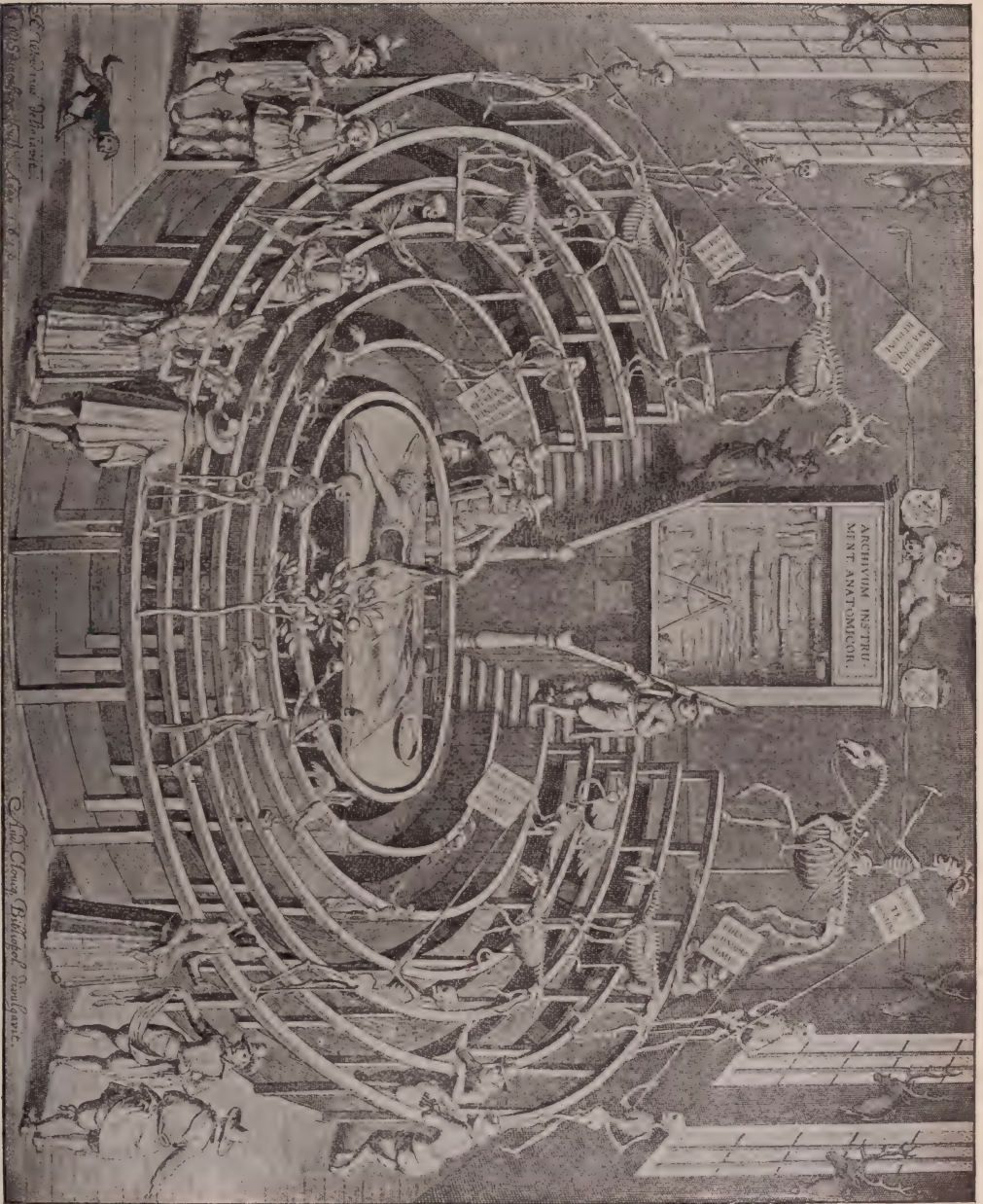


Fig. 2.—Anatomical Theatre in Leyden in the year 1610. Engraving by Woudanus von Swanenburch.

BOOK REVIEWS.

THE INTERNAL SECRETIONS AND THE PRINCIPLES OF MEDICINE. By Charles E. de M. Sajous, M. D., Fellow of the College of Physicians of Philadelphia; Member of the American Philosophical Society of the Academy of Natural Sciences of Philadelphia, etc.; Knight of the Legion of Honor and Officer of the Academy of France; Knight of the Order of Leopold of Belgium, etc.; Formerly Lecturer on Laryngology in Jefferson College and Professor of Laryngology and Dean of the Faculty in the Medico-Chirurgical College; Formerly Professor of Anatomy and Physiology in the Wagner Institute of Science. Volume Second. With twenty-five illustrations. Philadelphia: F. A. Davis Company, 1907.

The second volume of Sajous's work is a development of the conclusions advanced in the first volume, which appeared some years ago. The therapeutic applications of the doctrines advanced in the first volume are in it carried to their logical conclusions. Sajous's doctrine, in brief, is as follows: The chief of the internal secretions is derived from the adrenals, whose product is the oxidizing agent of the blood and contains a substance which preserves the vital activity of the cells. The thyroid secretion, too, is of great metabolic importance, as is shown in its relation to myxedema and hyperthyroidism. The ordinary theories of thyroid activity are, however, fallacious. The chief function of its secretion is to stimulate a center in the pituitary body. This organ, which he terms the somatic brain, is of the highest importance. Its function is to protect the body against disease. When stimulated either by thyroid activity or by the presence of toxins in the blood, the pituitary body produces a substance which, when carried to the adrenals, excites these organs to an over-production of their oxidizing principle. This in its turn causes the production of a hyperleucocytosis and stimulates the pancreas to an over-production of trypsin. These three agents, the oxidizing substance of the adrenals, the nucleoproteid produced by the leucocytes and the pancreatic trypsin, unite to form an auto-antitoxin which destroys the bacteria and their products. The opsonins, however, are derived from the thyroid. Ordinarily, the normal activity of these organs suffices to repel infection, but in disease they must be stimulated by drugs and other therapeutic measures.

Sajous's book is worth reading. It is based upon a careful study of the functions of the ductless glands and its conclusions are logically developed from his premises. It may be that future observations will confirm Sajous's views and render this an epoch-making work. As yet, however, it seems a little premature. Our knowledge of pathologic physiology is still in its infancy and it is quite possible that future discoveries will utterly destroy the very foundation upon which his conclusions are based. The book is interesting and worth perusing, but should be read with this reservation in mind.

BEITRAEGE ZUR KLINIK DER TUBERKULOSE. Herausgegeben von Dr. Ludolph Brauer. Bd. viii. Wuerzburg, A. Stuber's Verlag (Curt Kabitzsch), 1907.

Volume VIII. of the Beitrage continues along the same lines as its predecessors. About half of the contributions are concerned with the clinical aspects of tuberculosis, the other half with laboratory questions. Among the interesting contributions may be mentioned two on the important forms of tubercle bacilli that are so little acid-fast that they can not be stained with the ordinary methods. They seem related to the bovine species and their presence is held to be of good omen prognostically. In a discussion of the diazo-reactions in tuberculosis, Weisz believes that he has found the responsible substance in a chromogen of urochrome. The volume is noteworthy for a nearly complete absence of all discussion of tuberculin, therapeutically and diagnostically, and the subject of opsonins is again conspicuous by its absence.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By Elbert W. Rockwood, M. D., Ph. D., Professor of Chemistry and Toxicology and Head of the Department of Chemistry in the University of Iowa, etc. Second Edition, Revised and Enlarged. With One Colored Plate and Three Plates of

Microscopic Preparations. Large 12mo, 229 pages, extra cloth. Price, \$1.00 net. F. A. Davis Company, Publishers, 1914 Cherry Street, Philadelphia, Pa. A convenient little manual, chiefly intended for class-room work. The practitioner too will find it useful for handy reference as a supplement to his books on clinical chemistry and microscopy.

MANUAL OF PHYSIOLOGICAL AND CLINICAL CHEMISTRY. By Elias H. Bartley, B. S., M. D., Ph.G. Third Edition, Revised and Enlarged, with fifty-one illustrations. Phila.: P. Blakiston's Son & Co., 1907.

This little volume is a miracle of condensation. In it will be found concisely yet adequately described all the more significant chemical procedures utilized in clinical diagnosis. The discussion of milk analysis is especially complete.

CLINICAL TREATISES ON THE SYMPTOMATOLOGY AND DIAGNOSIS OF DISORDERS OF RESPIRATION AND CIRCULATION. By Prof. Edmund von Neusser, M. D. Translated by Andrew MacFarlane, M. D. Part I., Dyspnoea and Cyanosis. New York: E. B. Treat & Co., 1907.

There are three ways in which the study of disease may be approached: from the point of view of the etiology, from that of the laboratory findings, and from that of the symptomatology. It is the last method that Prof. von Neusser has chosen in his series of monographs. After a discussion of the nature of dyspnoea and cyanosis, he takes up one by one the conditions that may be responsible for these symptoms, and with keen analysis and a fund of clinical allusion makes clear the relation of symptom to disease. The succeeding volumes are to be on Tachycardia and Bradycardia and on Angina Pectoris.

PATHOLOGISCHE PHYSIOLOGIE. Ein Lehrbuch fuer Studierende und Aerzte. Von Dr. Ludolf Krehl, o. Professor und Direktor der medizinischen Klinik in Heidelberg. Mit einem Beitrag von Professor E. Levy in Strassburg. Fuenfte neu bearbeitete Auflage. Leipzig: Verlag von F. C. W. Vogel, 1907.

With a few shining exceptions, practically all of our medical schools show a very grave omission in their laboratory curriculum. The study of the normal human body is well represented in its static and kinetic aspect by anatomy and physiology. The diseased organism is, however, ordinarily studied, in courses on pathologic anatomy only from the point of view of the ultimate effects of disease. The study of the metabolic processes of disease is comparatively neglected, or at least taught only in a didactic manner. And yet pathologic physiology concerns the practicing physician more intimately than any of the other great divisions of medical study. In Krehl's book an attempt is made to fill this gap. In general, the structure of the book is that of most physiologies. Circulation, respiration, digestion and so forth are taken up in turn, but a knowledge of their physiology is assumed and the changes in function arising from disease are discussed with great thoroughness. Gaps in the presentation are of course inevitable. Our knowledge of pathologic physiology, being comparatively recent, is even more incomplete than that of normal physiology, and everywhere we are brought up against the confines of the known. Nevertheless, the matter here presented, objectively and with a minimum of theorizing speculation, must be of the greatest interest and importance to every clinician. The book can be unreservedly commended, and it is to be hoped that before long an adequate English translation will unlock its treasures to those who are unable to read it in the original.

DIE THIERISCHEN PARASITEN DES MENSCHEN. Ein Handbuch fuer Studierende und Aerzte von Dr. Max Braun, o. æ. Professor der Zoologie und vergl. Anatomie des zoologischen Museums der Universität Königsberg i. Pr. Mit 325 Abbildungen im Text. Vierte, vermehrte und verbesserte Auflage. Mit einem klinisch-therapeutischen Anhang bearbeitet von Prof. Dr. Otto Seifert in Wuerzburg. Curt Kabitzsch (A. Stuber's Verlag), 1908.

After a discussion of parasitism in general in its various aspects, the author describes in detail all the known human animal parasites. The subject is handled from the purely zoologic point of view, the protozoa, helminthes, nematodes, acanthocephali, gordiidae, hirudineae and arthropods undergoing a detailed description in turn. Few of them have clinical significance, the great bulk being purely of zoologic interest and some, such as the leeches, being parasites in only the widest interpretation of the term. In connection with the human parasites, similar ones peculiar to the lower animals are also described, so that the volume might well be called "The Parasites of Mammals" rather than merely "of Man."

A characteristic feature of the book is a refreshing scepticism. Without this, the very nature of the subject would lead the author into a wilderness of specu-

lation. Many widely accepted views are dismissed, with a brief "not proven." Thus he declines to accept the spirochæte pallida of syphilis as a protozoon, while not committing himself to its bacterial nature. The cytorrhætes of vaccine, syphilis and the like are described, but the possibility of their being mere degeneration products is emphasized. In a word, the reader will find here a complete, but cautious and conservative presentation of the subject. In an appendix, Prof. Seiffert discusses the clinical picture, the prevention and the treatment of diseases due to animal parasites. As was proper, he confines himself to diseases of human beings.

RATIONAL HOME GYMNASTICS. By Hartvig Nissen, Director of Physical Training, Brookline Public Schools; Instructor in Swedish Gymnastics and Massage at Harvard University Summer School, etc. E. H. Bacon & Co., 8 Beacon Street, Boston, Publishers.

In this work the author presents his method of teaching gymnastics in the various institutions with which he is connected. The instructions are particularly adapted for exercises in the home. The book contains many useful suggestions for exercises in various pathologic conditions.

THERAPEUTISCHES TASCHENBUCH FUER HAUT UND GESCHLECHTSKRANKHEITEN. By Dr. Alfred Blaschko und Dr. Max Jacobsohn in Berlin. Verlag von Fischer's Mediz. Buchhandlung in Berlin. Preis, Mk. 2.80.

Two eminent German dermatologists and genitourinary surgeons, Drs. Blaschko and Jacobsohn, of Berlin, in this little book, give an outline of the treatment carried on for years in their private practice and clinical work. They only mention what has proved to them to be of great value in the treatment of diseases of the skin and of genitourinary diseases, and this fact makes the book worth having. The arrangements of the diseases in alphabetical order and the book being interleaved, make it the more handy for use.

HAND-BOOK OF CUTANEOUS THERAPEUTICS FOR THE USE OF GENERAL PRACTITIONERS.

By W. A. Hardaway, M. D., LL.D., and Joseph Grindon, Ph.B., M. D. Lea Brothers & Co., Philadelphia and New York.

It is with great pleasure that we receive this first American hand-book of cutaneous therapeutics. Drs. Hardaway and Grindon have done a good work in writing this book, which should be in the hands not only of general practitioners, but of specialists as well. A short but clear description of every disease, sometimes completed by a few practical remarks on symptomatology and etiology, precedes the therapy. The latter gives us first the personal experience of the authors, in which we feel all the time the masterhand of Dr. Hardaway, the "Father of Dermatology in the West," who gives us an enormous amount of practical points that are of value to every one who treats diseases of the skin. Not only do we find here the way the authors most often treat their cases, but they also mention very extensively the methods used by other dermatologists the world over, giving due credit to all of them.

In the second part of the book general treatment and methods find a place. This part, written by Dr. Grindon, gives a brief description of internal treatment and local applications without going deeply into the theories on which general treatment is based. Special sections are devoted to radiotherapy, the high frequency current, galvanism, faradism, minor surgical operations, and the latest methods of treatment, as Hollaender's hot air treatment, Bier's hyperemia, the treatment with liquid air and solidified carbon dioxide.

A TEXT-BOOK OF CLINICAL ANATOMY: FOR STUDENTS AND PRACTITIONERS. By Daniel N. Eisendrath, A. B., M. D., Clinical Professor of Anatomy in the Medical Department of the University of Illinois (College of Physicians and Surgeons), Chicago. Second Revised Edition. Octavo of 535 pages, with 153 illustrations, a number in colors. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$5.00 net; Half Morocco, \$6.50 net.

Some years ago we received and reviewed the first edition of this work, and have had occasion many times since to refer to the excellent text and well selected drawings. The book was primarily meant as an aid to the author in teaching his students the relation of descriptive anatomy to clinical practice, but it has proved a valuable reference book for the practitioner, and will be a good addition to most medical libraries.

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EDITORIAL.

COSMETIC SURGERY AS A FINE ART.

The desire on the part of mankind to improve on the work of Nature has always been paramount in the human breast. Instances without number could be given where defeat has resulted, but although the centuries that have passed show many instances of inglorious failure, such is the ambition and unrest of the people of to-day, that the bitter lessons recorded, far from discouraging or crushing the tentative attempts at improvement, are really so many incentives to more extraordinary performances. The latest advocate of the art of facial expression—an advocate who has small faith in Galton's theory of Eugenics since the knife spells for him all the virtues of the sword of Excalibur—is Dr. Charles C. Miller, whose book "The Correction of Featural Imperfections," appears to us so exhaustive of the subject and so fearfully and wonderfully made, that all importunities of opinion must be brushed aside, and even the mildest sort of criticism awed into quiescence. This of course was our first thought, but being disciples of the elder Pliny who said "I never read a book so bad but I drew some knowledge from it," we feel that a great injustice would be done the author were we cursorily to dismiss a book that bears the hall-mark, not only of earnestness born of a wiredrawn ingenuity, but shows how this medical philosopher in the street was sympathetically moved by the impact of accidental facial imperfections on his nature.

Plutarch in his life of Pericles says: "He who busies himself in mean occupations produces, in the very pains he takes about things of little or no use, an evidence against himself of his negligence and indisposition to what is really good," and bearing this in mind we must admit that the author would have had no trouble to find favor with the Greek historian, for his occupation is far from mean, in as much as it has for its message, the desire to mutate such undesirable

"featural imperfections" as "the double chin," "the inverted lip," "the nose with the bulbous tip," "hump nose," and "folds, bags and wrinkles about the eyes," into perfections that must surely invite a better opinion from the critical, and restore the rehabilitated to that position in society which would always have been theirs, had age and nature been less malicious.

When we remember the wrong inferences we have drawn as to character, temperament, and even morality, in connection with the above defects, a categorical denial of the vast possibilities attending the scientific interferences, as promulgated by Dr. Miller, would indicate that we are opposed to the proper understanding of character, and that selfishness compels us to frustrate any attempt on the part of a surgeon to benefit others, so that their lineaments may approach our own facial perfection. What we do object to is a surgeon demeaning the art of surgery by introducing into its practice the law laid down by Ibsen that evil is produced by circumstances and not by character. Of course "circumstances" in the special surgical province about which Dr. Miller has written, resolves itself into this: that thin lips, a scowl, and the absence of a dimple, are often instrumental in rendering a subject thus afflicted, an undecipherable human document; and though the traits of character which make for jollity are really part and parcel of his make-up, they are marred by these "featural imperfections"—hence their alteration for something better, so that the "evil" of misinterpretation and the subsequent change in character may be obviated.

Some years ago—if we mistake not, in 1862—Edmond About, the French novelist, wrote a novel, "The Notary's Nose," in which he showed that he was a poetical clinician, for his imagination soared high in describing the untoward possibilities of skin-grafting when the skin is removed from a drunkard and grafted on an aristocrat's nose. The many changes the nose underwent due to the bibulous habits of the original owner of the skin, are minutely recorded; but what interests us most in reading the story is the fact that the notary's character underwent such direful changes after he realized that the results of the operation were "somewhat" of a failure, that even his staunchest friends forsook him. In reading Dr. Miller's swift and headlong plea for interference with tip-tilted noses, and many others too numerous to mention, we are reminded of About's bitter felicity of phrase for, even now, though surgery has made many advances since the middle of the 19th century, there are possibilities of failure attending operations which have for their object the improvement of "featural imperfections."

PUBLIC LIBRARIES AND THE HEALTH OF THE CHILD.

That Public Libraries are a boon to the community is accepted as a fact by the unwary, and if it were not a truism that the unwary predominate in a community, any criticism bearing on the gratuitous dissemination of books could justly be thought a matter of supererogation. Among the unwary are not, as might at first be supposed, men and women of only limited intellect and experience, but some of the best educators of this country. By what peculiar and devious ways it happens that teachers are just the ones who uphold our public libraries with enthusiasm, when the training for their vocation ought to make even the most obtuse, sensitive to the best methods for the physical and mental growth of the child, is a problem of decided intricacy. Pedagogic societies of which we hear so much just at present, we take it, are much more interested in Women's Work and Wages, the Celtic movement in literature, the painters of the Renaissance, Orcagna and the Bassano family, than in a subject which should be to them brimful of vitality; otherwise the outside world—and now we mean the medical—would occasionally become cognizant of a spirit of revolt against the evil we have under consideration.

Medical men throughout the world are not unaware that until quite recently the growing child received but scant attention from scientific writers. Not so very long ago, in the schoolroom, precocity was thought to be a quality that needed either decided curbing, or the most extraordinary encouragement; dullness, a badge of dishonor, to be requited by certain marks so that its lowly position as a mental defect could not be mistaken; and inability to master arithmetic, when the predilection on the part of the child showed plainly a greater desire for reading and grammar, was placed in the same category with dullness. Though these various attitudes, on the part of educators and writers to the mental peculiarities of children, sound rather primitive now, enough of the strange misunderstandings, between teacher and pupil, remains to be the text for a medical sermon. And as if the aforementioned evils were not sufficient to engage the best thought of educators and writers for many a day, a new unnecessary evil has been added to the list, in the shape of the rather innumerable free libraries founded through the generosity of some of our misguided millionaires.

To characterize the free library, in so far as its doors are open to the old and young alike, other than as a menace to the mental growth of the child, is to mince matters. Moreover with the laxity that prevails in most American households, especially in the lower social circles, the young have privileges which the parents do not take the trouble to curtail, either for want of interest in the well-being of their offspring, or

lack of the proper education to make them good supervisors. Then again, the prevalence among the associates of the young, of certain reading habits, makes it almost impossible for parents, unless they are painstaking students of what ought to constitute the proper mental food for their children, to exercise enough disciplinary power to stamp out a nuisance such as the reading of jejune works of fiction. And though the free libraries may reiterate, until the crack of doom, that the books for the young on their shelves have been separated from all literary chaff, they fail to recognize the great harm done to the community by inviting all sorts and conditions of children to read. We cannot expect the stewards of free books to study the mental traits of each youthful applicant; or to differentiate between the child of psychasthenic precocity and the dullard. But the gravity of the situation would be brought home to educators and purveyors of free books alike, were they to study the dire results of artificial emotional stress and morbid obsessions in neurotic children. To say that these conditions are hereditary, is to hark back to something that is a mooted question, and a sham excuse for explaining our own stupidities in furthering undesired tendencies by feeding them on a so-called intellectual diet.

A solution of the problem of the sort of intellectual diet for the growing child, is not so difficult as would at first seem. In England, today, schools for mothers have been founded, and in a book recently published,* we read of the experiments instituted to reduce infantile mortality by establishing milk depôts, the gratifying results from instructing mothers in their homes by personal visitation and by demonstration in the schools, and the benefits accruing to the infant from a special department for infant consultations. These problems are worthy of the greatest attention, and should appeal to the philanthropists in this country, where as yet no school of the English sort has been attempted. But while we do not deny the importance of the most strenuous efforts for the reducing of infantile mortality, the problem of the deterioration or improvement in the mental growth of the parlous child, whose wit and cunning and ingenuity, either entrance or disgust us; and of the many other children who range from eminence to mediocrity, is of such gigantic proportions that schools for mothers and teachers, ought at once to be established in this country. In these schools, if properly supervised by medical men, the evils of our school curricula, our free libraries, our lax educational ideas as they prevail in innumerable households, could be thoroughly threshed, so that both mothers and teachers would soon know the sources of mental fatigue, nervous instability and hyperesthesia.

*Schools for Mothers. London: Horace Marshall and Sons.

SUICIDE AND THE FINANCIAL DEPRESSION.

The lesson taught by the excitement incident to the financial crisis, which recently upset the business world in this country, is fraught with all the defective elements of our much-vaunted social life. With an enthusiasm which we claim as our own by right of a new civilization founded on the easy and ready possibilities of acquiring money, we have developed among us a monomania which can best be described by using the term of the older school of French alienists—*La Monomanie Ambitieuse*. True, the French alienists applied the term to those men and women whose *idée fixe* was regicidal; but since American society is a leveler of all things, flagrantly democratic in its abhorrence of men of power who by their strength might grow into personalities of kingly supremacy, the term is expressive enough to use as the obsession of all Americans who are ambitious to increase their wealth.

Every monomania has for its ultimate results a weakening of the mental powers; for though in its incipency a fixed idea may have only the good qualities of the purposeful, ere long judgment, stability, and equilibrium are swamped. Therefore we see that the mental stamina which alone are the ballast of the individual, are often so decidedly honeycombed by the one large idea involved in the pursuit of the probable-attainable, that when they are really needed in times of great upheavals, they fail dismally. Hence, flouting of the gifts which are ours to conserve—despair and suicide.

The normality of a society must be formed of other elements than obtain with us today. Ambition is well in its way; but to class it among the good qualities of a nation, the physical and mental health must be of a vigor to withstand its nefarious inroads. The history of our sociology in the last decade shows unmistakably that as yet the intellect of the American people is not of sufficient strength to keep pace with their overpowering ambition, and not until a complete equalization between the two takes place will society show, in its statistics, the beneficial attributes of the latter.

In attacking the problem of the physical and mental health of society, its outward signs of blatancy and grandiloquency should not blind us to the slow process of disintegration that a monomania begets. The meretricious has always been our besetting sin, and every encouragement it receives closes the chapter, containing the true state of the minds of the distracted, from our view. As philosophers in the province of medicine, it is our duty not to be in accord with the philosopher in the street, who is always shouting that isolated cases of mental shock are characteristic of American society.

CREMATION.

The term, sanitation, so easy of pronunciation and so effective as a scientific ingredient of our otherwise prosaic conversation, is constantly on our tongue's end when the humanities, which are supposed to influence the medical mind continually, are under discussion. In fact, the frequency with which we apply the term to the many uncorrected abuses stubborn of correction, must lead the laity to imagine that the more recalcitrant the subject, the greater our enthusiasm, and that a sanitary reform to be effective needs the concentration of many thinking medical men. Now though it be a fact that some reforms which have been made were undoubtedly the result of the combined mental forces of many men, this sort of allied concentration, while it has its virtues, has also its defects; for the centering of many minds on the correction of an abuse, especially when it is not spiritual but mundane as instanced in sanitation, blinds us to the needs of enlightenment of a decidedly positive sort on certain matters, which, though not so evident as house- and street sanitation, are nevertheless of prime importance. And of all matters which should engage our earnest attention—that is the scientific thought of the medical men, so that the right sort of instruction may be given to thinking and unthinking men and women—cremation is not the least worthy of a lengthened consideration.

That the subject of cremation is again receiving the attention it deserves, especially now that it is somewhat of a neglected quantity in the world of medical thought, should convince us that its purpose for good has really not been lost sight of, and that so long as men of Dr. J. Woodward Riley's mental calibre engage in an honest warfare in its behalf, the prejudices which befog the intelligence of physicians and laics alike, will, ere long, be brushed away and the great and sane advantages of the procedure made apparent. Just why we look upon Dr. Riley as capable of dealing out the right sort of fillip to the subject is made clear to anyone of ordinary intelligence directly upon reading the "Address On Cremation," delivered before the Shropshire and Mid-Wales Branch, October 8th, 1907; and although this particular address was especially prepared for an English audience, its message, as proclaimed by this man of light and leading, has enough vitality to make it effective with American readers. And surely we are not such intellectual giants that we can in all honesty say no lesson is needed by us on the subject of cremation. For with us its appeal is limited still to a small number of persons who are not only criticized but, to a certain extent, shunned for having "advanced ideas."

A survey of what has been accomplished in this country as to the adoption of a procedure which is humane and so far removed from the sickening and loathsome features of the usual form of burial that to place them in the same category were folly, is not of such proportions that any exultation need characterize our attitude. Religious prejudices; ignorance as to the slow processes of disintegration; or worse still, a disbelief that the body ever decays, founded on a materialism that is flown with all the raptures of an exaggerated idealism; an utter disregard of the problems of sanitation as they pertain to burying-grounds; are so many obstacles in the way of a thorough understanding of the benefits that would accrue, were the people to realize the exigency of cremation. And though the majority of us no longer believe in the materialistic reunion of the dead, the quick destruction of matter, as effected by the burning bodies, is met with derision; for the reason, we suppose, that the suddenness of the change is not in consonance with a sentiment which tolerates the slow process of putrefaction and even the burying of those who have died from infectious diseases such as diphtheria, scarlatina, variola, tuberculous diseases, etc.

Upon whom, then, does the duty of disseminating the good points of cremation devolve? The lay advocates may by suasion of speech accomplish the bringing about of attention to the subject; they may make the glass through which it has been heretofore viewed less dark so that the ordinary intelligence will be moved by a temporary wave of enthusiasm; but not until the medical profession grasps the full purport of its sanitary meaning, and then preaches its best tenets among the people, shall the balked thought of the few enthusiasts of today, grow into that condition of emancipated and gratified fruition which would mean a greater degree of health for the living.

OPINION AND CRITICISM.

A CHIP FROM AN INDIAN WORKSHOP.

That the Americans are not the only frenetic disciples of over-work is made apparent to us in an article by Captain H. A. J. Gidney, I. M. S., recently published in the *Indian Medical Gazette*. On September 25th last, Captain Gidney, undesirous of achieving a record but not unwilling to attend to his professional duties, proceeded to an outlying village, some 20 miles from his station, and commenced work at 8 A. M. Not being well-informed as to the vagaries of human nature in the Orient or the effect of climate on the nerves, we are not in a position to say just how Captain Gidney felt at this early hour, but judging from the 61 operations performed and the glittering results which followed (60 were entirely successful), we are surely justified in saying that if ever he was in prime condition it undoubtedly was on the morning of September 25th, 1907. Any man who can make 52 extractions of senile cataracts; 6 extractions of congenital cataracts; 2 iridectomies; and remove one pterygium, between the hours of eight in the morning and four in the afternoon, with but half an hour's interval for lunch, is deserving of more than passing mention. Herakles in his twelve labors, Jason in search of the Golden Fleece, Sigurd in pursuit of the treasure, are mythological instances of strenuosity that have often excited our wonder, if not our envy; Balzac writing "César Birotteau" in a fortnight and George Sand making "copy" from early morning until late at night, have invited our admiration; but it has remained for Captain Gidney, on account of these 61 delicate operations, to make us feel like "selfish, worthless human slugs, whose slime has failed to lubricate their path in life."

SOME WISE REMARKS ON SLEEP AND SLEEPLESSNESS.

Latterly the subject of sleep and sleeplessness has engaged the attention of many investigators; and though the observations set down in cold print, and the theories propounded for the induction of sleep and the destruction of sleeplessness, have often been of a tenor to excite our risibilities, the weighty words of Dr. Alexander Morison in his lecture "Sleep and Sleeplessness," printed in the *Lancet*, February 8th, should obliterate any impression our former readings of superficially-conceived articles have made on us. Most of the writers who have dabbled in the subject have thought fit to mention only the most extraordinary causes as provocative—in fact, the tendency seems to be to go far afield in search of hitherto undiscovered reasons; but as happens only too often

when enthusiasm is misdirected, the results achieved, as to enlightenment and instructiveness, have all the defects of faulty ratiocination. Now Dr. Morison does not belong to the ilk of investigators who are continually inviting our criticisms; on the contrary, by reason of a mental clarity most commendable, he gets at the underlying elements in our nature which surely must be responsible for those deviations from the normal, illustrated in the lack of the proper amount of sleep conducive to health. By underlying elements we mean heredity and temperament: those bug-bears of the unphilosophic medical practitioner but all the same the most important factors when the etiology of a much-discussed derangement, such as sleeplessness, is made a matter of inquiry by the thoughtful man. "Satisfaction is rest; dissatisfaction is unrest or continued stimulation," says the author, and with this thought in mind it is easy to comprehend why a satisfied state, the outcome of hereditary and temperamental traits in a fairly intelligent man, should have for its complement, sleep or its synonym unconsciousness; and on the other hand, a dissatisfied condition, also the result of heredity and temperament, and characteristic of poets, artists and neurotics, "possessors of powers of rapid perception, rumination, and expression,"—sleeplessness or consciousness. Thus we see that intellectualism is often the sworn enemy of the greatest balm in the gift of Nature.

A MATTER OF DIET.

In the address on the "Personal Factor in Diet," which Dr. Charles Macalister delivered before the Liverpool (Eng.) Medical Institution on Oct. 24th, 1907, we note many excellences which should sink deep into the varied and ingenious intellects of the small army of American medical writers, who have been guilty of many extravagances on the much-harassed subject of dietetics. Tennyson, speaking of Ben Jonson, said: "To me he appears to move in a sea of glue," and though the rapidity with which our writers arrive at wrong conclusions based on false premises, precludes any idea of slow movements, the progress towards illumination is of so minimum a character that nothing short of the intervention of "a sea of glue" can be held responsible. Dr. Macalister's verbal simplicity—an object lesson, by the way, for many of our medical literary dilettanti—is the means of presenting his arguments with force and dignity, and, we may add, in their proper light; but mere felicity of phrase is not wholly responsible for this, for behind it we find the right sort of thinker—a blend of scientist and practical observer. To instance what we mean, the following quotations should suffice: "And, furthermore, we can not help observing that whereas one person will live mainly upon proteid-containing vegetables, together with starches

and fats but very little meat, another regards the beefsteak as the foundation of strength and looks with compassion and concern upon his brother who can not or does not take it. Whoever wrote the old nursery rhyme—"Jack Spratt could eat no fat, his wife could eat no lean"—evidently recognized the personal factor in diet which is the subject of my remarks on this occasion, and I have no doubt that the writer of the rhyme also recognized that, although so different in their dietetic tastes and requirements, Jack and his wife were both perfectly healthy individuals," and, "there are those who can not take the purin-containing group of foods, such as meat, tea, coffee and cocoa, without suffering, but in reality this depends upon a metabolic idiosyncrasy or an idiosyncrasy of elimination." The more one thinks of these citations, the more is one convinced of their absolute truth. The whole history of the human race, and this, of course, is taking into consideration only a very minor matter, shows conclusively that idiosyncrasy must be of paramount importance in the preservation of health, otherwise there would be most distressful days followed, at short intervals, by death, for gourmets and gourmânds. That the latter specimen of the human species, though always voracious when food is set before him, is fortunately protected by certain dietary prejudices, is clear to anyone who has taken the time to study the Gargantuan appetites of our English ancestors. If this were not the case, there would be no way of explaining the manner of even a short survival after the usual meal in the early forties of the nineteenth century. No better illustration of the verity of this can be found than in the now almost forgotten volume, "Jorrock's Jaunts and Jollities," by R. S. Surtees, published in London in 1843. "The whole dinner," says the author, "first, second, third, fourth course,—everything, in fact, except dessert,—was on the table, as we sometimes see it at ordinaries and public dinners. Before Mr. and Mrs. Jorrocks were two great tureens of mock turtle soup, each capable of holding a gallon, and both full up to the brim. Then there were two sorts of fish, turbot and lobster sauce, and a great salmon. A round of boiled beef and an immense piece of roast occupied the rear of these, ready to march on the disappearance of the fish and soup—and behind the walls formed by the beef of Old England, came two dishes of grouse, each dish holding three brace. The side dishes consisted of a calf's head hashed, a leg of mutton, chickens, ducks, and mountains of vegetables; and round the windmill were plum puddings, tarts, jellies, pies and puffs."

LITERARY NOTES.

The personal in literature is again evidenced in a new book, "The Confession of a Medical Man," recently published by the Macmillan Company. "Confessions" have an interest of their own, and whether they be optimistic or pessimistic, the general reader is avid of their contents; therefore, any book bearing the seductive title is sure to have its readers. The book under consideration has many good points in its favor; it is written with rare honesty, has literary merit and its tone is always the opposite of depressing. As medical men we ought to rejoice in the last quality, for a similar work, "Bekenntnisse eines Arztes," by W. Weressajew, published some six years ago in Germany, gave the gloomiest sort of picture of a medical man with decided neurasthenic imperfections. The anonymity of the Macmillan publication should not condemn it or deprive it of a cordial reception on the part of those who admire courage; for the obliteration of one's name from the title page of a "Confession," is not so much an act of cowardice as a protest against future historians and biographers using the material for further inquiries into the physical and mental defects of the writer. We are prompted to say this on account of a paper, "La Maladie de Jean-Jacques Rousseau, d'après des documents récents," by M. Antonin Poncet in collaboration with M. René Leriche, which was recently read at a meeting of the Académie de Médecine. "Rousseau had a congenital stricture of the urethra and instead of regarding him as a psychasthenic 'carrying his bladder in his head' (portant sa vessie dans la tête), we should think of him as one whose many bizarre notions, crotchets and madness were aggravated, if not produced, by his urinary troubles—his prolonged dysuria," are words of his latest critics. That the candor and wickedness of the Genevan philosopher, facts which roused the ire of William Blake in the well-known lines: "Mock on, Mock on, Voltaire, Rousseau; Mock on, Mock on; 'tis all in vain!" can be explained on the grounds of "urinary troubles dating from an early age; habitual incomplete retention; incontinence and micturition on account of a distended bladder," is truly unfortunate for a writer, who overlooked so important a matter as anonymity, when preparing his "Confessions" for the world.

A book recently presented to the Académie de Médecine, bears the title "Les Névrosés de l'Histoire" (The Neurotics in History), and has for its progenitor, Dr. Lucien Nass. Anecdotic history has never been more popular with doctors than at present; hence they are able to understand the determinism of man's actions and ascertain their direct de-

pendence on the state of our organs, and their relation to influences in our surroundings. To reconstruct a picture of the physical and psychological characteristics of personages of former epochs, are not the best documents the so-called trivial details revealed in the anecdotes of eye-witnesses? Granted that this is true, and adding thereto a natural curiosity on the part of the medical public, it is easy to understand why medico-historic studies have many fervent admirers among the medical men. Dr. Lucien Nass's book appeals alike to the student and to him who has a curiosity to satisfy. Among the number of discriminating anecdotes characterized by deep interest, liveliness and diversion, the medical man who has applied himself to the study of degeneration and psychopathy will find much that will interest him. The lives of the last Valois and of the descendants of Charles V. are easy of comprehension when their physical and psychic defects are made clear. The exercise of absolute power, always a source of danger to the mentality of man, produces, in case there is degeneration, a typical neurosis, the neurosis of royal personages. This royal mental disturbance (*la maladie du trône*), or Cæserism, as it has been called by Prof. Lacassagne, attacks the mind of a monarch at its weakest point; and according to the dominant congenital defects, takes the form of sadism as in Charles IX., fanaticism as in Philip II., or megalomania as in Louis XIV. Instead of commanding their subjects, as was generally believed by them, and by the subjects themselves, these potentates were mere vassals as regards real power; and even their passions, their vices, not to mention their virtues, were not their own but a matter of heredity. As to the history of those other sovereigns, the princes of the faith or of popular credulity—the false Messiahs, the Joans of Arc and the Dauphins—they are expressions of a neurosis peculiar to a high state of romanticism which has recently been called, *mythomania*. Were these neuroses confined to monarchs and visionaries, their importance would not be of grave moment but unfortunately in many epochs, if not in all, individual passions soon become social and affect all walks of society. The Italian Renaissance, with its mixture of the cult of the beautiful, the passion for luxury and barbaric cruelty, furnishes a case in point, and shows, only too plainly, that the spirit of the times, whether medieval or modern, is affected by degenerating influences.

ORIGINAL ARTICLES.

SOME MECHANICAL PROBLEMS OF THE CIRCULATION
AND THEIR SOLUTION.*

By JOSEPH EICHBERG, M. D., of Cincinnati, Ohio.

The tendency of the present age in medicine is found in the endeavor to reduce all things to the physical basis; hence, the pre-eminence given both in physiologic and clinical work to the result of all forms of laboratory investigation, and hence the laudable effort to introduce instruments of precision into the study of phenomena previously imperfectly estimated or wholly misunderstood. To this effort we owe the ophthalmoscope, the measurement of errors of refraction with test glasses, the perimeter for the field of vision, the prism for testing the balance of ocular muscles, the determination of the gastric acidity, the increasing application of the chemistry of the secretions to the study of the problems of nutrition, both under normal and abnormal conditions, and the various devices introduced but recently for the better knowledge of the circulation. It is an era of the application of physical science to the elucidation of disease. For the most part, the expedients proposed have been devised more particularly for testing the physiologic function of the part concerned, and the valuable clinical facts have been established incidentally.

Curiously enough, the circulation of the blood was among the last to be included in this practical study on a precise basis. In our early medical education we were sufficiently impressed with the value of the *tactus eruditus*, that educated touch, only to be acquired after long experience, which should enable us to promptly recognize in the pulse at the wrist all the factors that make it so valuable a sign; its frequency, its regularity or otherwise, its quality of fullness or the contrary, the character and compressibility of the arterial walls, whether it be quick or slow—attributes easily separable from its frequency—its occasional appearance as a *pulsus paradoxus*, its correspondence or not with the apex beat of the heart, its exact synchronism and equality on the two sides. The value of this information when accurately observed, can hardly be overestimated; yet there was a demand for something more, a mathematical basis, which should place the interpretation of the symptoms beyond the chance always incidental to the personal equation of the particular observer. This desire had come as a logical consequence of the improved knowledge of arterial disease. The pioneer studies of Gull and Sutton had promptly arrested the attention of the entire profession; and the importance of arterial changes as a factor in the seemingly more serious, and usually more evident, heart trouble has gradually es-

*Read before the Mitchell District Medical Society, Oct. 20, 1907.

tablished itself as a clinical and a pathologic fact. It remained for the last few years to give us a uniform basis of measurement, and truly, both a standard for health and a means of comparison.

Primarily, the office of the circulation may be considered as mechanical, the problem being to distribute a certain mass of fluid, of fairly uniform consistency, regularly and frequently throughout the arterial distribution, with sufficient momentum to insure its return to the starting point. It is scarcely necessary to advert to the wonderful arrangement which insures the automatism of the circulation as a whole, beginning with the rhythmical action of the isolated heart fibre and extending to the farthest distribution of the vaso-motor system; nor need I remind you that these safeguarding devices not only protect the delicate glandular structure from shock or pressure by the recurring impulse of arterial distension, but also provide for every tissue in the body a supply always adequate to its nutrition, increasing or diminishing as its function is more or less actively performed.

Viewed, however, as a purely mechanical problem the considerations which underlie it have reference to the three factors that govern every application of energy, namely, the power, the weight and the resistance, the latter including all the factors which directly or indirectly retard the result.

The first subject to engage our attention, is the *power*; we have here to estimate but a single quantity, the muscular force of the heart's contraction. The heart is the force-pump of the circulation; its chief motive power. By virtue of its nervous connections, it is enabled most admirably to adjust itself to the needs of the economy under conditions the most diverse, proportioning the number of its beats to the muscular activity, the body temperature, the mental state, the presence of toxic substances in the blood, etc.; and it is probably through the same agency that it proportions the force of its contraction to the resistance to be overcome.

With reference to the marvelous facility of the mechanism for accommodation and regulation of the actual work of the heart, see the admirable description in the opening chapter of Krehl's work on pathological physiology. The volume of the right side of the heart may be increased six-fold under sudden increase of strain, and this condition is still compatible with a normal organ. In accommodating itself, the power of the heart depends on an intrinsic property of the muscle fibre. No time is given for reflex action. Increase of strain is followed immediately by increase of power in contraction, and then by increased velocity of the outgoing wave.

For practical purposes the *weight* may be considered as fairly constant; the circulation representing the movement of a definite quantity of fluid in a series of closed canals, which, nowhere affording any exit, must, of necessity, maintain the mass of liquid at about the same figure; yet every meal adds to the quantity of blood through absorption, and the processes of excretion and secretion as incessantly abstract from its volume. Moreover, though the quantity of blood may remain the same, its distribution is subject to hourly fluctuations; at one time the volume

of blood is greater in the voluntary muscles, at another in the splanchnic distribution; in the former case, the active arterial supply increases with corresponding increase in the work of the heart; in the latter the accumulation takes place in large venous trunks, so large, that it has been estimated that the entire quantity of blood in the body can find accommodation in the abdominal cavity; this unburdening of the general circulation, even while the quantity of blood remains the same, means a lowered arterial pressure with diminished work of the heart. These considerations will receive mention later, and may be momentarily dismissed as being related to variable and usually transient conditions.

The other constant factor is found in the arterial *resistance*, a resistance which increases steadily from the center of the circulation to the periphery, both because of the widening out of the arterial distribution, and because of the increasing quantity of muscular tissue in the arterial wall as we remove farther from the heart. The large vessels near the heart have walls made up very largely of elastic tissue; this grows less and less as the caliber of the vessel diminishes. Now the measure of the interaction of the two main factors, the power and the resistance is found in the arterial tension, which has been defined as that degree of force with which the blood is constantly endeavoring to leave the arterial wall. The arterial tension may be increased by undue action of the heart, either from actual hypertrophy of the heart wall, or from undue, excessive contraction of the normal wall, frequently determined by reflex nervous influence; or it may be increased with perfectly normal action of the heart, by reason of diminished elasticity, or increased rigidity; or actual thickening of the arterial wall, whereby the lumen is reduced.

Post-mortem examinations are constantly showing the interdependence of all these factors, either of which may primarily cause the trouble, but very soon brings the others in its train. It is not our province here to enter into a discussion of the question as to which in the individual instance may be the primary lesion, though, as will appear, the early recognition of this important fact has a most important bearing on the treatment, and on the time for its adoption. We can no longer regard the vessels merely as a set of conduits; every artery is a miniature contractile heart, an auxiliary force of the circulation.

Conversely the arterial tension may be reduced by diminished power of the heart; there is no known condition of the arterial wall, which enables the arterial resistance to be diminished from that side, but tension may be reduced by simultaneous action of the vaso-dilators over large areas of distribution.

For us, as practicing physicians, the important point is to possess some means of arriving accurately and promptly at the determination of the amount of work being performed by the heart under usual and abnormal conditions. The various forms of registering apparatus, more or less improved upon the original design of Marey, have the desirable quality of rendering visible and tangible the variations in pressure to which the *instrument* is subjected, but *not necessarily* the variations in

pressure on the inside of the artery. Indeed there are so many sources of error in the ordinary sphygmogram, that not the most experienced would dare to say from the mere inspection of the tracing what the exact departure from the normal might be. Add to this that a good sphygmograph is costly, that it requires very careful adjustment and much time to each tracing, and there is reason sufficient why this instrument has not found very general usage.

The whole study of the subject has entered upon a new phase with the introduction of the Riva-Rocci sphygmomanometer. In the early experiments of Hales, the pressure within the arteries was experimentally determined in animals by dividing an artery, and connecting the severed central and peripheral ends directly with a mercurial manometer. In the human subject this was of course impossible, and it was the ingenious device of Riva-Rocci which first supplied us with a substitute. Acting on the easily understood principle, that a certain pressure within the artery could only be overcome by a corresponding pressure on the outside of its wall, he devised his now well-known instrument; consisting of an elastic bulb, connected by means of elastic tubing with a slightly elastic cuff applied around the arm above the elbow, the air within the cuff communicating with a mercurial manometer, on which the pressure was read off in millimeters of mercury. After careful adjustment of the apparatus, the patient was so seated or arranged that the position of the cuff should bring it into the same horizontal plane with the heart; and the examiner then with one hand took the pulse of the arm carrying the cuff, while with the other air was pumped into the cuff until the pulse at the wrist disappeared. The amount of pressure necessary to bring this about was read off on the manometer scale, as also the level at which the pulse was again detected. The necessary apparatus is exceedingly simple, can be transported without much difficulty, and, if rather crude, has still given tangible results.

The imperfections of the apparatus lie largely in the fact that a certain hurling, oscillatory movement is always communicated to the mercurial column by the necessity for rapidly and frequently compressing the bulb, which makes the resulting level of the mercury an approximate rather than an absolute one; 2nd, that the volume of air in the various sections of the elastic apparatus may not instantly distribute the pressure uniformly; 3rd, that the elastic air cushion is often so large that it interferes with the satisfactory application of the pressure; and 4th, the inertia of the mercurial column.

A new instrument devised by Von Recklinghausen, of Strassburg, seems to overcome these objections. The mercurial column is done away with entirely—a manifest advantage—as some of the pressure in the cuff was always needed to lift the actual weight of the mercury, and could not be ascribed to the arterial pressure. The principle of the cuff is still maintained, but the cuff is made very broad, relatively inelastic, and the quantity of air in the apparatus reduced to a minimum. The bulb is replaced by a pump, with a most ingenious arrangement of levers, easily controlled by the hand that is making pressure, whereby the

degree of the latter is at all times capable of any desired change; the pressure is made uniformly, by forcing the piston down, and the amount of this pressure is marked by a needle on a scale graduated in centimeters of water. The needle is very delicately mounted, and movement is imparted to it through the intermediate action of a curved metal tube whose curve is steadily flattened as the pressure increases. Individual variations in the instruments are corrected by a series of observations made by the manufacturer before the instruments leave the shop; and the margin of error of such instruments is so small that it is less than one-half of one per cent. The instrument is really more easily portable than the Riva-Rocci apparatus, is much less fragile and need only be protected from sudden jars and direct violence, which might alter the parallelism of the planes and thus distort the readings. A certain degree of familiarity with the instrument can only be acquired by experience, and frequent observations on the normal pulse should always precede any endeavor to apply it to clinical uses. The eye must be trained to quick reading of the scale, and the finger also schooled by earnest attention to detect the first indication of the pulse. In using the tonometer of Recklinghausen the pressure is at once carried to the point where the pulse is obliterated; and the reading noted, as the air is allowed slowly to escape, at the point where the needle shows a large oscillation—corresponding with the minimum arterial—or diastolic pressure, which, as experience has shown, is more uniformly accurate than the maximum pressure.

As pointed out by Recklinghausen this method need not depend in any sense on the taking of the pulse. Accuracy can be secured by merely observing the oscillation of the needle, which is fairly wide up to the point where the pulse disappears, when it immediately becomes very much smaller. He suggests that this might very properly be termed the oscillatory method in contradistinction to the method by palpation. It requires no elucidation to show how much more reliable would be the visible movement of the needle, than the disappearance of the pulse, as judged by different observers—where greater delicacy of touch, a better ability to concentrate the attention, the greater thickness of the tissues overlying the artery, perhaps an anomalous distribution of the artery, all might materially modify the result.

No mention has been made of the electro-cardiograph, first devised by Einthoven and then modified by Nicolai and Kraus; by which the action of the heart is supposed to produce electro-magnetic currents, positive at the base and negative at the apex of the heart, which can be conducted away from the right and left arms respectively, and then photographed by means of the magnified variations of an exceedingly fine platinum thread interposed between the poles of a powerful electro-magnet. The variations of these currents produce vibrations in the needle, and the currents themselves change in relative intensity with the alternate contraction and dilatation of auricles and ventricles. Nicolai and Kraus in a recent publication (No. 25 and 26 *Berl. Klin. Woch.*, 1907), claim for this method great diagnostic value, the special

advantage being that varying physiologic conditions—as increase or decrease of frequency in the pulse, change of position, forced respiration, etc., do not in any sense modify the normal picture, so that a distinct change can only be construed as irrefutable evidence of a pathologic condition. The apparatus can never find wider application because of its great cost, and somewhat complicated technique.

At no time can we lose sight of the fact that the individual normal arterial pressure, proper to the individual, is as much a personal feature, as traits of countenance, percentage acidity of the gastric juice, or frequency of the pulse beat. A pulse of 60 is normal for one healthy individual, of 82 for another, of 96 for the third, yet we speak of 72 as the normal pulse rate; and any manifest departure from this average, if not otherwise explainable, at once arrests attention and calls for repeated observation of the individual under varying conditions, to ascertain the cause of the change; thus, too, we have established a basis of normal acidity for the gastric juice, within certain limits; yet we know that those limits are often passed in perfectly healthy individuals, so that some men have introduced the paradoxical term of a normal hyperacidity; and we also know that for the same individual the relative percentage of acid, even after test meals, is not always the same. This was a result that might have been expected; and we must be careful in interpreting the results of the study of arterial tension not to establish a too arbitrary standard, and to make proper allowance for the individual variation. If we pursue this course, much is to be learnt from a constant interrogation of the arterial tension.

One of the most important changes in this tension occurs in arteriosclerosis. Arteriosclerosis, as we now recognize it, is perceived as a pathologic condition only at the time when the lesions are, as it were, macroscopic; when we see the hemorrhages into the retina, or feel the tortuous, incompressible artery at the wrist, or find the patient with the nocturnal neuralgia of the extremities, or with angina pectoris, or note the tendency to gangrene of the foot, or else recognize the process by the appearance of polyuria, occasional traces of albumin, etc. At such a time all that we can hope to do for the patient limits itself to the retardation of further change, and the adaptation of his daily life to the greatly diminished sphere of activity that is yet possible. How manifestly greater our possible usefulness, if we could detect the earliest beginnings of the disease, and, thereby not only prevent its farther advance, while the process is yet microscopic, but also give the chance, as happens with so many other tissues, of a complete restoration to the normal, provided the exciting cause be removed!

It might seem, that it would be a matter of some difficulty to distinguish, even in a case of definitely increased arterial pressure, whether the heart or the arteries were the more at fault; the discrimination is, however, easily made. We will assume that the physician can readily recognize the presence of valvular lesions or muscular change in the heart walls, or of arterial change possibly compromising the coronary vessels. The problem still remains to determine how great the power

of resistance in the heart despite valvular defect, or damaged myocardium, or of inelastic or thickened arteries; because it is this which determines the particular method of therapeutic aid we may desire to render. We have a convenient term, expressive and accurate, when we speak of the *degree of compensation*. Despite all handicaps, a compensated lesion is compatible with a fairly long and useful life; here, too, the problem is the early determination of the latent element of weakness, which is surely, if insidiously, making inroads on the reserve power of the heart.

It is no less important that we should have some means of recognizing the purely functional disturbances of the heart as such. They represent a large class, and form a most important contingent of those affections which come under daily notice. They easily counterfeit the early stages of myocarditis, and their recognition as distinct neuroses is therefore of the utmost importance.

We will admit that a heart, slightly damaged, may still be adequate to the ordinary routine work, but is certain to betray its impaired condition when any added strain is imposed. All that is necessary is therefore some measureable mechanical work by which we arrive at a conclusion, first formulated by Gräupner (*Die Messung der Herzkraft*) that "so long as an individual can perform a certain amount of measured labor, and so long as this work leads to the training and improvement of the heart's work, so long the measure of work performed remains within the individual capacity and power of adaptation."

What is "training?" By training we mean that process by which, under the influence of nervous reflex action, any unusual bodily effort no longer produces a disproportionate excitability in the heart and arteries. Practice or training reduces the extent of the rise in frequency of the heart's action following exercise, and also enables the heart to return promptly to the normal, after a brief interval of rest; at the same time moderate exercise of the heart as of other muscles, stimulates the nutrition. This presupposes a healthy muscle, to begin with; and we must be careful not to impose the test upon a weak muscle, either weakened by hereditary causes, or by disease—such as occurs in or after febrile processes, or wasting conditions. It was customary to argue an improvement, if the exercise was followed by diminution of heart dullness, but there may be increase of dullness with improved functional activity and conversely, diminution of precordial dullness frequently follows from simple cutaneous irritation, though the actual work is diminished. If the heart is really benefited by training, this is also shown by an improvement in the arterial tension.

Now, increase of work over and above the amount suitable to the individual will be followed by weakness rather than improvement, so that the greatest yield of heart and artery work with a given amount of mechanical work, is spoken of as the individual adaptation. Increase of the work above this individual adaptability will be followed by increased pulse frequency, by tardy return to the normal quiet beat, and by a diminution in arterial tension; even after repose the pulse remains small and weak. Now this is a purely physiologic process, a physiologic

insufficiency, and the difference between the healthy and diseased heart is a difference of degree.

The necessity for rest is imposed upon the heart after muscular effort, firstly because, by means of its own increased effort, organic poisons have been generated within its own substance—and secondly, because with increased tension the work of the heart to maintain the circulation has been increased, and thirdly, because the relatively larger volume of blood in the exercised muscle imposes changed conditions upon the circulation. Increase of tension in the aorta leads to increase of work of the heart; but only up to a certain point, after which the actual work of the heart diminishes with farther increase of arterial tension. When, now, the arterial tension falls, the work (the word work is here used in the sense of actual labor done—not as an assigned duty) of the heart again increases; thus an improvement in what we may term the yield of the heart follows a lowering of arterial resistance as a regular physiologic process. These facts are attested both by experiments upon animals and by clinical experience.

Gräupner calls particular attention to this circumstance, that a period of rest following great muscular effort is attended by a short period of increased arterial tension, during which the pulse is felt in a condition of extreme tension and fullness; the tension at first being lowered, then much increased, before returning to the normal, as a physiologic process; and construes this as a process most favorable to the improved nutrition of the heart muscle itself, maximal diastole with unusual filling of the coronary arteries; a process of restoration. When such changes do not occur, the functional energy of the heart gets worse—and if the individual is denied the opportunity of rest, the effects of overexertion will not be slow to manifest themselves. Now the *energy and rapidity with which this process of restoration takes place is the direct measure of the power of resistance of the heart*; the weaker the process, the more tardy its appearance, the feebler the myocardium. Though the arm feel no fatigue, if this be the part tested, the insufficiency soon shows itself, if the heart be damaged; and conversely, the arm may grow tired, though the heart show a perfectly normal condition. Gräupner claims that experience with this test will enable one to determine without auscultation and percussion, whether hypertrophy, myocarditis, valvular defect, or purely functional trouble is concerned in the particular case, or how far myocarditis may be coupled with a neurosis.

Particularly important is the possible recognition of latent change in the myocardium, that is to say, the earliest period of pathologic change. Now the power of the heart is made up of two factors, the restorative or recuperative power, and the training adaptability, and the power increases with increase in each of these qualities; the recuperative power sinks with every impairment of nutrition, whether due to general nutritive disturbance, or to toxic agencies, as alcohol, nicotine, or excessive content of carbonic gas in the blood, or accumulation of waste products from excessive exercise. The greatest impairment follows arteriosclerosis of the coronary arteries of such degree as to affect a large part of the

myocardium. Arterial change of less degree may lead to disseminated foci of degeneration without seriously embarrassing the organ as a whole.

Increased arterial resistance as a cause of diminished heart power manifests itself by a *diminished adaptability while the recuperative power may be very good*. Whenever the recuperative power is good we must assume the existence of a normal myocardium, even though the actual work of the heart be below normal. On the other hand, the diminution of recuperative power, even in the presence of cardiac hypertrophy, forces the conclusion of latent myocarditis. This may serve to explain the cases reported by Kraus of fatal chloroform narcosis in persons with a good pulse, while others with a clinically bad pulse go through it very well.

For testing the heart function the estimation of the blood pressure is of the greatest value. Contradictory results are due to the fact that many observers rest content with one or two observations. From what has preceded, it must be apparent that after any effort, sufficient to affect the circulation, there comes first a period of depression, then one of increased tension, after which the heart returns to the normal. It is therefore only possible to determine the actual normal tension when observations, repeated for some time, give a uniform result. So long as the tension remains high after any given work, or returns to the normal and remains there, so long that amount of work may be considered as within the training capacity of the individual. The insufficiency already mentioned as physiologic becomes pathologic when the tension remains below normal for a long time, or does not return to the normal, or does not pass into the phase of increased tension. A sudden drop in blood pressure after the phase of increased tension is due to overexertion or exhaustion. A difference in the functional capacity of the right and left ventricle, a disturbance of the normal balance, is indicated for the left ventricle by a more decided functional weakness in the standing than in the recumbent position; for the right side the weakness is more apparent in the recumbent posture, because the volume of blood entering the right side is greater in lying than in the erect position, and because then the right heart receives less assistance from the respiratory excursion of the thorax. Whatever the explanation, it is certain that disturbances of compensation affecting the right heart are attended with orthopnea as a frequent symptom.

This method of testing the resistance work is manifestly inapplicable when other indications have convinced us of the absolute weakness or inefficiency of the heart, or in such arterial disease as aortic aneurysm. For the purpose of making such tests special instruments known as ergometers have been devised, but a simple system of weights and pulleys will answer very well. I have recently used for this test the simple expedient of having the patient walk rapidly up two flights of stairs; the results have been very satisfactory. The suggestion for using this form of exercise was first made by Cabot.

As regards the arterial resistance, we must include with this not only the arteries themselves, but the great volume of the capillaries, which,

as Stricker showed in 1866, are distinctly contractile, can respond to electric stimulation and consequently represent an important agency in the regulation of blood pressure.

Next to the heart itself, it would seem that the most important role is played by the splanchnic nerves. From the studies of Ludwig and Thiry, and of M. and E. Cyon, it appears that, with the heart completely isolated from all nervous connections, irritation of the peripheral end of the divided spinal cord is followed by a marked increase of blood pressure, which, however, fails to manifest itself if the splanchnic is first divided. The increase of general blood pressure is due to contraction of the abdominal vessels through the splanchnic connection; experiments of Goltz have also shown that in pithed and decapitated frogs the circulation speedily ceases, from overdistension of all the abdominal vessels; the animal bleeds to death in its own splanchnic distribution; and the agency of the depressor nerve of the circulation has been shown by Ludwig and Cyon to be due to the dilatation of the abdominal vessels. Asp, in Ludwig's laboratory, showed that the arterial tension may be increased over 100 per cent by irritation of the peripheral end of the divided splanchnic, through contraction of the abdominal vessels; more important, however, was his experiment, that irritation of the central end was also followed by increased blood pressure, the increase being greater than from the peripheral end; in this case the impulse must manifestly be conveyed through reflex paths.

The blood pressure in the human arterial system was measured by Faivre, in 1856, on the femoral artery after amputation, and found to be 120 m.m. of mercury, in the brachial 110 m.m. Albert, in 1882, in the anterior tibial found a pressure of 100-160 m.m. Federn, in Vienna, gives a mean pressure of 100 in the radial as normal, and considers everything above this as suspicious. He also regards the absence of cardiac asthma in cases of increased blood pressure as pointing to the increased functional power of the heart as the responsible factor, rather than to an implication of the arteries. Increased tension due to increased resistance is attested by the absence of hypertrophy, or by small pulse and cardiac asthma even in the presence of hypertrophy.

He also asserts that the symptoms accompanying increased tension from increased resistance are different in younger and older subjects. Of such as are found in younger subjects may be mentioned transient and recurrent diarrhoea, headache, diminished capacity for work, disturbed sleep, mental depression, occasionally migraine.

In old patients we may have the same symptoms, but oftener there is a feeling of heaviness and pressure in the head, vertigo, especially likely to come on with change of position, a feeling of congestion in the head when stooping, a tendency to light asthmatic attacks; if to the increased tension there be added a febrile disturbance, the symptoms of the latter are rendered much graver with every increase of blood pressure.

Federn would make almost every form of neurasthenia depend upon increased blood pressure, for which he finds a starting point in reflex impulses passing from the abdominal cavity, and affecting the general

circulation through the agency of the splanchnic. The evidence of this increase of blood pressure is often furnished by urinary changes, increase of uric acid, the transient appearance of sugar or albumen; these were formerly attributed to the nervous agency, but the nervous disturbance, like the altered chemical condition, is the result of the increased blood pressure, which, if long continued, renders the nervous system more irritable, and less able to cope, without succumbing with any unusual strain or emotion, such as fright, sorrow or trouble.

Whenever the resistance in the arteries increases, the heart must perform greater labor to maintain the circulation; if the heart be normal, it undergoes hypertrophy. If itself impaired, it can only meet the condition by such a degree of exertion, as soon leads to over-exertion—which manifests itself by cardiac asthma. It is also evident that the increase of resistance may attain such a point, that even the normal heart is soon exhausted in the effort to overcome it. *Cardiac insufficiency consists simply in this, that the heart is not equal to the performance of its function without manifest effort.* Federn speaks of a pain about the heart to which he gives the appropriate name of *fatigue pain*, and mentions as an important physical sign, accompanying fluctuations in the blood pressure, variation in the pitch, the intensity and localization of cardiac murmurs, even when dependent on organic disease.

No less noteworthy is the statement that increased blood pressure is manifest in the early stage of arteriosclerosis, even before there has been any marked weakening of the elasticity of the vessels; at a time when the blood pressure is still adequate to fully distend the aorta and all the peripheral arteries as far as the capillary distribution. It is indeed a question whether the atheromatous process may not be occasioned by the chronic increase of resistance; or, if not caused by it, at least greatly accelerated; it seems only reasonable that the delicate structure of arterial and capillary wall must undergo some deleterious change under the influence of long-continued, abnormally high pressure, which we now have it in our power to recognize at every stage, by such instruments as the tonometer.

UNUSUAL POSITIONS OF THE APPENDIX, WITH REPORT OF CASES.*

By H. TUHOLSKE, M. D., of St. Louis.

It is not my intention, nor is it indicated at this time, and before this society, to touch, be it ever so lightly, upon the development, ontogenetic or phylogenetic, or on the morphology of the appendix vermiformis. My desire is to place on record a number of cases of unusual position of the appendix. I advisedly use the term *unusual* instead of *abnormal* positions, since the apparently abnormal is the outcome of the usual positions which the appendix occupies during its period of development, during the time when the coecum, situated in the subhepatic space across the duodenum, under the stomach towards the left, bending downwards, becomes the descending colon; when the growing coils of the small intestine are towards the right and the large intestine upon the left side; when the subhepatic space, small, because of the large size of the liver and the small size of the lumbar vertebrae, approaches so closely the right iliac fossa; and when coils of the small intestine lie behind the coecum instead of mesially and below, preventing, until they resume their later positions, the approximation and attachment of the coecum to the posterior parietal peritoneum. Arrest of development, inflammatory or other pathological processes, may then hold the appendix in the position it is just then occupying, unknown and producing no symptoms, until it becomes involved in inflammatory, simple or specific conditions, or malignant degeneration processes. The appendix, therefore, from its history of development, may be found anywhere in the abdomen from the liver to the pelvis, on the right or the left side.

The following cases present some of these unusual conditions:

Case 1. This is the case of a young girl now in the hospital. She was seen the first time when she was seven years of age. She came for examination for a minor ailment, and, finding nothing requiring surgical interference, I turned the patient over to Dr. Johnson. On my examination I had found that I had a case of situs transversus; the heart was on the right side, the liver on the left side, the spleen on the right side. Dr. Johnson confirmed the diagnosis. The girl grew up, developing beautifully and becoming a large girl, now thirteen years of age, having fair health, not suffering on account of the situs transversus. She went away on a summer vacation recently, when she was taken with abdominal pains, referred to the left ovarian region. She consulted a physician, who found her getting over the fever and pain, and who discharged her a few days later, with the diagnosis of ovarian trouble. Some eight weeks afterwards, the same thing occurred, was similarly diagnosed and treated. Four weeks ago I was called to see her. Dr. Johnson, who told me the pain was localizing on the left side, knowing the situs transversus, thought there was trouble with the appendix.

* Read before the St. Louis Surgical Society, January 8, 1908.

After an examination, I agreed, and stated that we were dealing with an appendicitis, and advised operation, which was performed nine days ago. Knowing the position of her organs, I felt no doubt that we would find the appendix on the left side, and therefore I made the incision on the left side at once, found the coecum and appendix, the latter erect and without any mesenterium whatever. The usual operation was performed and the usual recovery followed.

Case 2. This case occurred at the Washington University Clinic, the patient being turned over to the surgical clinic with a diagnosis of appendicitis. Patient had suffered many times with pains in the belly, sometimes of a severe, sometimes of a mild character, and gave no history indicating previous disease, except typhoid fever, and after the typhoid fever, an intestinal trouble, which at one time was thought to be one of stricture, following some ulcerative process.

I made an incision on the right side, put my finger into the belly, but did not come in contact with the coecum at all, but with a piece of intestine, which I recognized as the rectum, and wishing to demonstrate to the class that the rectum was on the right side, I introduced a bougie per anum, raised the gut out of the abdominal cavity, and demonstrated the condition. I closed the wound, opened the belly on the left side, found the appendix and removed it.

Case 3. This case was referred to me by Dr. P. G. Robinson, who had diagnosed an abscess of unknown cause on the left side. I made the incision for an abscess without determinable cause. It was readily shown, after cutting into the pus cavity, that I had cut down on the coecum, and I found the appendix, loosened, gangrenous and swimming in pus. I removed it.

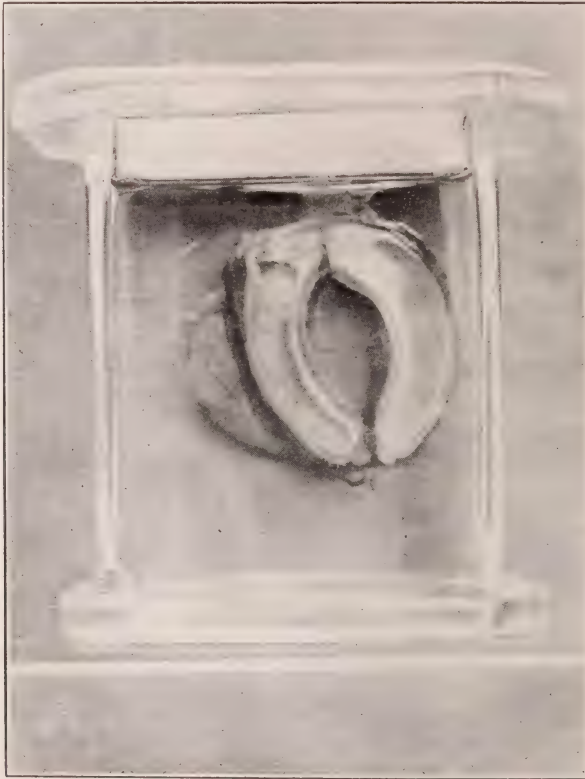
Case 4. This case was one of considerable interest and, although not rare, unusual. It was a case that Dr. Tupper had seen with Dr. Jonas and myself. The woman had a femoral hernia and some obscure pelvic trouble. After some days we made out an exudate and thought we were dealing with an abscess in the pelvis on the left side. Dr. Jonas made an incision, such as we make for ligation of the external iliac artery, expecting to approach the abscess extraperitoneally. A pus tube was found instead of a pelvic abscess. An incision was made in the median line, and the tip of the appendix was found at the fimbriated extremity on the left side. The coecum was pulled over almost to the median line. The pus tube and the appendix were removed, and the patient recovered.

Case 5. This was the case of a woman, the wife of a doctor, who presented herself with a fistulous opening to the right of the rectus in the gall-bladder region. It had been taken to be an abscess about the gall-bladder, perhaps an empyemic gall-bladder. She had been operated on at her home in the country, and she got well, a fistula remaining; however. I cut down near this sinus through clean tissue, and found the appendix attached to the under surface of the liver. The appendix was removed and the fistula healed.

Case 6. This patient came to me with foudroyant peritonitis, the re-

sult of some appendix trouble. At the first operation I simply cut down to drain and allow the patient to get over the attack. I told him to return some time later and have the appendix removed. The appendix did not come in sight during the operation, and no effort was made to hunt for it. Patient returned six months later in good health, and I cut down along the margin of the rectus muscle, and found the coecum drawn over toward the median line and covered by loops of small intestine. Having separated the adhesions, I found the appendix lying upon and adherent to the abdominal aorta, just below the coeliac axis. I managed to peel the appendix off of the aorta and remove it.

Case 7. This case I was called to see after patient had had a number of attacks of appendicitis. I advised waiting for the interval period. After two weeks, he came to me apparently free from all pain and disturbance, reporting himself ready for the operation. I could make out



Specimen of appendectiasis.

a swelling in the region of the appendix. There was a peculiar symptom, which he mentioned, namely that for months he had been troubled with seminal emissions without in any way having given himself any cause to have them, without any venereal disease, any im-

proper practices or debauch. I did not think at the time that there could be any connection between that condition and the appendicitis. I found the appendix in the normal position, but it extended far down into the pelvis. I could not get at its tip, so made a larger incision, and following it downward, found it attached to the prostate, and then lost in a mass of adhesions. I could not find the tip end, and while digging for it I tore the appendix. I removed quite a long appendix, but had to leave the distal end and drain. Patient died on the fourth day, being troubled on the very day after operation and the few days following, with emissions amounting to five or six a day. I take it that the irritation of the prostate, or perhaps of the seminal vesicles, by the inflamed and adherent appendix, was the cause of those emissions. Never before has the responsibility for such symptoms been traced to the appendix.

With the report of this last case I close the list of unusual positions of the appendix under my observation, and beg to present for your examination this specimen of an appendix, uniformly dilated, closed at the coecal end, containing a mucoid fluid, the mucous membrane and the musculature atrophied; this might be called a mucocoele or an appendectiasis.

THE CUTANEOUS TUBERCULIN REACTION. A CLINICAL REPORT.*

By LOUIS M. WARFIELD, M. D., of St. Louis.

The studies in immunity have led to the discovery of a remarkable property of the blood serum known as anaphylaxis. This property, discovered by Richet, is the increased susceptibility of an organism to toxins or serums that also render the same organisms immune to these toxins or serums. Thus Rosenau and Anderson have shown that horse serum that is harmless in fairly large doses for guinea-pigs is powerfully toxic if the guinea-pig be injected with a small amount of the serum, and then ten or twelve days later be injected with a fraction of a cubic centimeter. Moreover they showed that by injecting small doses of serum daily the animal could be rendered immune to the serum.

The mechanism of this process of anaphylaxis has been exhaustively studied by Gay and Southard who found that the histologic lesions were analogous to those of fatty degeneration. The substance circulating in the blood that prepares the cells for the toxic action of the agent they propose to call anaphylactin.

von Pirquet found that those who had been recently vaccinated with cow lymph reacted in a very peculiar, but constant manner, to revaccination. They seemed to be hypersensitive and yet they were immune. Within twenty-four hours after revaccination there was a local reaction at the vaccinated spot but absolutely no general reaction. He says that immunity and hypersensibility can be intimately associated. The vaccinated person reacts toward lymph, the luetic towards syphilitic virus, the tuberculous towards tuberculin, the one injected with serum towards the serum, quite differently from an individual who has never been brought in contact with the specific agent; therefore he is far from being immune. All that one can say is that his reactive power is changed. He proposes for this general conception of the changed power, the word, *allergie*. The person vaccinated, the tuberculous, the one injected with the serum, is *allergish* towards the respective foreign substances.

It was his work on revaccination that led von Pirquet to try the effect of tuberculin vaccination on tuberculous subjects. At a meeting of the Berlin Medical Society he called attention to the phenomena of revaccination. This "early reaction," as he called it, consisted in the appearance of a papule at the site of the vaccination within twenty-four hours. He reported that he had made use of this principle to vaccinate children with tuberculin. He considered that if they had tuberculosis they would react as did the revaccinated cow lymph cases. He had therefore vaccinated 500 tuberculous children and nearly all had reacted. Those who did not react were cases of miliary tuberculosis, tuberculous meningitis in the last stages, and cachectic children. He thought that the diagnostic

*Read before the Section on Internal Medicine of the St. Louis Medical Society, January 11, 1908.

value of the reaction was limited to children, as statistics from post mortem records showed such a large percentage of adults affected with tuberculosis who died of other diseases, that adults would react to the test.

Later he reported results on 360 children. Of the clinically tuberculous, 88 per cent were positive; of the clinically unsuspected, 16 per cent were positive. Twelve per cent were negative, these were children in cachectic stages or end stages of miliary tuberculosis. In children from 8-14 years, 35 per cent reacted who showed no signs of tuberculosis. Among 109 infants only two were positive. A five months infant reacted positively and at autopsy tuberculosis was found. In 23 cases there were records of post mortem examinations. Three cases, cachectic when vaccinated, who did not react, showed tuberculous lesions. Five who reacted showed tuberculous lesions. In 15 who did not react no tuberculosis could be found.

Wolff-Eisner reported that he could affirm von Pirquet's statements. He had found old tuberculin the best preparation. The tuberkulol of Merck also was good. New tuberculin (Koch) showed the weakest reaction. He had obtained results with dilutions of 1-10,000 old tuberculin. At this time he also mentioned his ocular reaction with 1-10 old tuberculin.

At the meeting of July 24, 1907, Citron called attention to the value of the reaction in children, but stated that every adult reacted and therefore it was not of value in adults as an aid to diagnosis.

Dufour reported before the Academy of Medicine at Paris that he had found a unanimity of reaction in children with the von Pirquet and the Calmette reaction. He also found that cachectic cases do not react.

Later von Pirquet reported a series of 100 autopsies on children who were from a few months to 14 years old. He found that practically always in the last ten days of life in the tuberculous, the reaction failed. Again he saw several cases that after several vaccinations showed mild positive reaction. He suggests three possibilities for such reactions:

1. Through excitation of the allergie by means of the tuberculin vaccination as such.
2. Through the reawakening of an antibody production consequent on the vaccination.
3. Through an infection with tuberculosis in the meantime, with a consequent production of antibodies.

He leans to the second explanation, although theoretically the first is plausible. One of his cases might be explained on the third theory.

He found moreover that cases that on post mortem showed only a calcified lymph gland or a calcified nodule at an apex reacted to the test. Healed as well as active lesions therefore are capable of calling forth the reaction. In one case that reacted positively the only probable tuberculous lesion was adhesion of the lung to the pleura.

To sum up: In 34 deaths from tuberculosis, 24 were tested in the last ten days. Thirteen failed to react, eleven were positive. In 11 cases that had been tested previously, all reacted positively. In 13 cases where

tuberculosis was found as an accidental lesion post mortem, 6 reacted to the first vaccination, 3 later. Four were negative of which three were tested during the last ten days of life. In all the 32 cases with positive reaction caseated tuberculous glands at least were found (one exception above). In 52 post mortem examinations revealing no macroscopic lesions of tuberculosis, none reacted to the allergic test. He thinks that "a positive reaction shows surely the presence of tuberculous changes. A negative result means in general freedom from tuberculosis; however the test regularly fails in the last ten days of fatal tuberculosis." He also called attention to the fact that more than half the negative cases occurred in the first year of life.

Engel and Bauer do not agree with von Pirquet. They tested over 300 children and infants. In 48 infants 6 reacted positively. Five of these seemed certainly free from tuberculosis. One died and autopsy revealed no sign of tuberculosis. Four others did not react to injections of tuberculin. The fifth infant reacted to injection of tuberculin.

On the contrary out of 280 children from 3 to 14 years old many reacted. The children were all from the poorer classes and most were underfed and some gave a family history of tuberculosis.

In general they believe that there is a close relationship between von Pirquet's reaction and tuberculosis, although they would not draw such certain conclusions as he has drawn. For infants they do not believe that it is of great value.

Interest in the work led me to try the test on a series of persons of all ages, whether tuberculous or not. I have been carrying it on since last summer. The chief object was to find out if the reaction was of any value as an aid to the diagnosis of early tuberculosis. All know how difficult it is to diagnose incipient lung tuberculosis, and any method that will give any assistance to us must be hailed as a marked advance in our treatment, for the earlier the diagnosis the surer the result for the patient.

If one scratches the skin of a tuberculous patient through a drop of old tuberculin diluted to 25 per cent, a very constant reaction takes place. A typical reaction is shown first in the formation of a small pinkish papule within twenty-four hours usually, at the site of the vaccination. This is soon surrounded by an area of hyperemia to be followed later, about the second or third day, by a group of small vesicles filled with clear serum that coalesce in a raised ring around the spot of scarification. This ring of vesicles may attain the diameter of 15 m.m. and the hyperemia surrounding them ends rather abruptly in the normal skin. After ten days or two weeks the vesicles dry up without pustulation and slight scaling occurs. There may be subjectively a little itching. Between this marked reaction and the simple one of a small papule surrounded by a small area of hyperemia lasting only three or four days, all gradations occur.

von Pirquet recommends a special form of instrument with a chisel-like end that is used with a rotary motion to scarify the skin. I have

made an instrument, that answers all purposes, out of an old blood lance by filing off the point.

My procedure is as follows: The skin of the upper arm in a place free from hairs, is washed with alcohol and allowed to dry. On two places situated about 3 inches apart, is dropped from a sterilized hypodermic syringe, one drop of a 25 per cent solution of Koch's old tuberculin. (The syringe is used instead of a dropper on account of the small size of the drop and the ease in getting just one drop.) The skin between the drops is then scarified with the lance by turning it to and fro and then through the drops the scarification is done. After one or two minutes the tuberculin is mopped up. No dressing is necessary. The scarification must not draw blood. Should the faintest reaction occur it is easily seen by comparing it with the central control spot.

In the appended tables I have used the following symbols: S is the suggestive reaction, i. e., only a faint pinkish areola around the scarified spot with no papule, vanishing before two days. + is a papule without vesiculation. ++ a papule with a few small vesicles. +++ a marked reaction—all are alike. — negative * vanishing.

My series includes 150 cases from 3 months to 51 years old. There are unfortunately no autopsy records.

Fifty-five babies from three months to four years old were tested at the Bethesda Foundling Home, 51 children from 5 to 14 years old at the Episcopal Orphans' Home. I take this opportunity of expressing my thanks to Dr. E. W. Saunders for permission to use this material. Dr. White, interne at Bethesda, I also wish to thank for his interest and coöperation, and also Dr. H. Unterberg, who has been of great service. Thirty-two cases were in dispensary and private practice.

Of the 55 babies only one, an infant of 7 months, reacted. This baby was apparently healthy. It happened that a few facts were known about its mother. She had advanced tuberculosis when the baby was born and died one month later. The baby was with her all the time. Another case, one that did not react, was born of a tuberculous mother but was immediately taken from her. The woman died of tuberculosis soon afterwards. One or two other babies born of tuberculous mothers did not react. No satisfactory history could be obtained in these cases.

The children at the Orphans' Home proved most interesting. In the table sisters and brothers are indicated by a parenthesis sign. Fourteen out of 51 reacted, some with a very marked reaction.

Three in one family, 6, 8, and 10 years, the youngest and oldest reacted slightly. History not sure, but it is believed that the mother died of tuberculosis. Two in one family, 8 and 12 years old, the older one reacted slightly. History not known. Two sisters, 8 and 9 years, the older one reacted slightly. History not known. A brother and sister, aged 12 and 15, both reacted, the sister more markedly. No history. Three children, two boys and a girl, 7, 9 and 12 years, all reacted. It is known that the mother died of tuberculosis two years ago. The children were then placed in the orphanage. Two brothers, 6 and 9 years, reacted slightly. No history. Several groups of brothers and sisters

TABLE No. I.

No.	Name	Age	Sex	24h	48h	72h	10d	Remarks
1	P. M.	10	f	—	—	—	—	
2	T. B.	9	m	s	—	—	—	
3	S. B.	8	m	—	—	—	—	
4	R. B.	10	f	s	+	—	—	
5	P. B.	6	f	s	s	+	—	
6	R. W.	13	f	s	—	—	—	
7	G. P.	8	m	—	—	—	+	A delayed and questionable reaction.
8	E. O'C.	9	m	s	—	—	—	
9	J. O'C.	7	f	—	—	—	—	
10	H. M.	8	m	s	—	—	—	
11	G. M.	12	m	s	+	—	+	Slight scaling, probably positive.
12	M. St. C.	9	f	s	+	—	—	
13	K. K.	8	f	—	—	—	—	
14	V. K.	9	f	s	+	+	—	
15	S. J.	14	f	s	—	—	—	
16	C. A.	8	f	s	—	—	—	
17	M. B.	12	m	s	+	+	*	Undoubtedly slightly positive.
18	E. B.	15	f	+	++	++	*	Scaling on 12th day.
19	M. N.	6	f	++	+++	+++	*	Very marked reaction.
20	S. P.	6	f	—	+	+	*	
21	L. B.	12	f	+	++	++	*	Mother died of tub. 2 years ago.
22	H. B.	7	m	+	+	+	*	do
23	W. B.	9	m	+	++	++	*	do
24	A. S.	9	m	s	+	+	*	
25	T. S.	6	m	s	+	+	+	Slight papule end 10th day with areola 5 mm.
26	G. P.	13	f	—	—	—	—	
27	L. M.	6	f	—	—	—	—	
28	N. L.	8	f	—	—	—	—	
29	M. O.	10	f	—	—	—	—	
30	G. H.	12	m	—	—	—	—	
31	I. H.	10	f	s	—	—	—	
32	Z. W.	14	f	—	—	—	—	
33	D. M.	5	m	—	—	—	—	
34	J. R.	6	m	—	—	—	—	
35	E. McG.	9	m	—	—	—	—	
36	E. McG.	6	f	—	—	—	—	
37	F. P.	8	m	—	—	—	—	
38	L. L.	9	m	s	—	—	—	
39	T. P.	10	m	—	—	—	—	
40	G. O.	8	m	—	—	—	—	
41	S. B.	8	m	—	—	—	—	
42	E. M.	10	m	s	—	—	—	
43	W. L.	6	m	—	—	—	—	
44	C. S.	5	m	—	—	—	—	
45	L. H.	6	m	—	—	—	—	
46	M. C.	11	f	—	—	—	—	
47	J. M.	6	f	—	—	—	—	
48	E. O.	9	f	+	+	—	—	Throat trouble and frequently hoarse
49	A. O.	11	f	—	—	—	—	
50	M. H.	12	f	—	—	—	—	
51	H. H.	9	m	s	—	—	—	

did not react. It must be borne in mind that these children were unusually healthy, well nourished, none of whom had any evidences of tuberculosis.

The remaining forty-five cases are very instructive. They show that not all adults by any means react to the test. The oldest case, a woman 51 years old, was quite negative, and the youngest, 9 years old, was also negative. One of the most typical reactions occurred in a man 26 years old, well nourished and perfectly healthy. He had never had any illness. No tuberculosis in the family history. He was injected with 1 mg. of Koch's old tuberculin. There was no reaction. He was then given 5 mg. of old tuberculin. Twenty-two hours afterwards there was intense headache. There followed within a few hours malaise, rapid pulse and a rise of 1 1-5 F. There was considerable induration and swelling at the site of the injection.

One case, male, aged 31, did not react on two separate occasions. There was no reaction to 5 mg. of old tuberculin given in the arm. To 10 mg. there was some slight rapidity of the pulse and a very slight rise of temperature with no subjective sensations or pain at the site of inoculation. Another case, a woman aged 32, on whom a diagnosis of "quick consumption" had been made three years ago and in whose lungs no definite signs can be found, did not react to the test. Three milligrams and five milligrams of old tuberculin caused only a half a degree rise of temperature with no subjective symptoms and no change in the lung signs.

The reaction occurred more or less in 27 of the cases. Six of these were well persons. Two brothers 15 and 18 years old were undersized, pale, with long narrow thoraxes and stooped shoulders. Their father and mother died of tuberculosis 9 and 2 years ago. Three young men, physicians, healthy, with good family history reacted markedly. The sixth was a very tall, thin, narrow-chested boy of 19 years, family history good. He was always tired, could not concentrate his mind and was subject to fainting spells.

Eight positive cases included suspected early tuberculosis, diagnosed early tuberculosis, and one healed case. This last case was a girl who was sent to Mt. Vernon Sanatorium last July, diagnosed incipient tuberculosis, lesion at right apex.

The other twelve cases were patients in the tuberculosis ward of the City Hospital. All were in fair condition except one who was markedly cachectic. He was the only one who did not react.

I confess that I put considerable faith in this very simple test. One may say that many apparently healthy people react to the test hence its value is limited. One may reply that a positive Widal test does not always show active typhoid fever nor does the demonstration of diphtheria bacilli in the throat always mean that the patient has diphtheria. Even the finding of tubercle bacilli in the sputum may not mean active tuberculosis of the lungs. No one test makes a diagnosis. The difficulty attending the attempts to use the laboratory as a final court of appeal, is known to all. This cutaneous reaction shows tuberculosis at the time or previously. Of that I do not believe there can be much doubt, but the diagnosis is not to rest on this one test alone. von Pirquet finds that if there is only a caseated gland or a calcified nodule at an apex, that

TABLE NO. II.

No.	Name	Age	Sex	24h	48h	72h	10d	Diagnosis	Remarks
1	J. M. }	18	m	+	+	+		Well	Father and mother died of tuberculosis 9 and 2 years ago.
2	A. M. }	18	m	+	+	+		Well	"
3	J. G.	21	f	+	+	+		Incipient tbc. healed	"
4	L. J.	36	f	+	+	+		Incipient tbc.	Sanatorium case, initial hemorrhage. Few signs.
5	S. F.	38	f	+	+	+		Incipient tbc.	Diagnosis made before skin reaction used.
6	H. T.	19	m	+	+	+		Incipient tbc.	Slight cough in a. m., past few mos. Suggestive signs.
7	H. G.	27	m	+	+	+	*	Incipient tbc.	Loss weight, slight cough.
8	B. S.	25	m	+	+	+	*	Well	
9	S. S.	25	m	+	+	+	*	Well	
10	H. W.	26	m	s	+	+	*	Well	Very marked reaction, large vesicles and areola 15 mm.
11	S. W.	26	m	+	+	+	*	Incipient tbc.	For past year indefinite stomach trouble. Malaise.
12	B. S.	35	m	+	+	+	*	Incipient tbc.	Slight lesion at right apex. Tired all the time.
13	M. M.	32	f	+	+	+	*	Incipient tbc.	Rapid pulse, slight afternoon fever, slight dry cough.
14	M. T.	19	m	+	+	+	*	Well	Long thorax, thin tall boy.
15	H. O.	37	m	+	+	+	*	Healed tbc. (?)	Lost 20 lbs. past year. Signs of healed lesion.
16	C. B.	33	f	+	+	+	*	Inc. tbc. dry pleurisy	Slight cough, tired all the time, slight lesion at right apex.
17	B. G.	26	f	+	+	+		Well	
18	A. F.	9	f	+	+	+		Chorea, mitral insuf.	Considerable cough. Father now has adv. tuberculosis.
19	O. Q.	30	m	+	+	+		Amoebic dysentery	On account loss of weight and cough had been diagnosed tbc.
20	R. G.	16	f	+	+	+		Neurotic	
21	N. S.	36	f	+	+	+		Well	Indefinite and uncertain signs right apex.
22	A. M.	16	f	+	+	+		Well	
23	A. P.	30	f	+	+	+		Well	Husband died tbc. Sept., '07. Exam. patient negative.
24	M. C.	21	f	+	+	+		Pyonephrosis	Acid fast bacilli found in urine. Tuberculosis kidney considered.
25	L. W.	31	m	+	+	+		Well	
26	J. K.	19	m	+	+	+		Neurotic	
27	D. G.	28	m	+	+	+		Mucous colitis	
28	L. C.	32	f	+	+	+		Chlorosis	Also negative to ophthalmic reaction, suggestive signs apex.
29	M. F.	21	f	+	+	+		Asthma	
30	S. S.	51	f	+	+	+		Gonorrhoeal arthritis	Tuberculosis suggested. Signs indefinite.
31	J. S.	32	m	+	+	+		Exophthalmic goitre	
32	M. G.	34	m	+	+	+			

the reaction followed vaccination. Cachectic cases, cases of miliary tuberculosis, and lethal cases of tuberculous meningitis do not react to injections of tuberculin always. The reacting power of the body seems to be benumbed, the organism is already overwhelmed with the toxin, and the cells can produce no more receptors.

Therefore it is no argument to say that because well persons react the test is of no value. To my mind it is the negative reaction that is the most valuable. Given a case such as one of the three boys in my series, I do not believe that it shows active lesions, as there were no evidences of activity of the tubercle bacilli and careful physical examination revealed no lesion. But what the positive reaction did call attention to was the great probability that those cases if neglected would develop active tuberculosis. Of course only time will prove this belief.

Again, in a case that seems to be one of incipient tuberculosis, but after frequent examinations and careful observation there is still some doubt, the positive reaction means to my mind the extreme probability that the case is tuberculosis and I treat it as such. Such cases if treated energetically get well. The positive reaction is just another link in the chain of evidence. Such cases would undoubtedly react to injections of tuberculin. However, there is always a slight element of danger connected with the injection of tuberculin and moreover to give properly such injections requires that the patient be in bed or where he can be watched, and that his temperature be carefully taken. This is not always feasible except in a sanatorium. In the cutaneous test there is no discomfort, no constitutional disturbance. It is absolutely harmless. Further work from many observers must be done before we can place it alongside of the Widal reaction, for example, but enough has already been done to convince me, at least, of the value of the test in children and adults.

My conclusions may be summed up as follows:

1. The cutaneous tuberculin reaction of von Pirquet is a perfectly harmless procedure.
2. All adults do not react to the vaccination.
3. It is of value in the so-called pretuberculous stage.
4. The negative reaction precludes tuberculosis so far as we can be sure of the results of any one test.
5. A positive reaction does not always mean active tuberculosis. It may mean a healed lesion somewhere in the body, but it calls attention to the possibility of later tuberculosis. It also draws attention to the probable tuberculous nature of the case and a more careful examination of the patient will sometimes reveal the previously overlooked lesion.

Metropolitan Building.

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THE HISTORY OF THE HOUSE; THE STRUGGLE FOR FRESH AIR AND LIGHT.

By GEORGE M. GOULD, M. D., of Philadelphia.

The fact of the rafters is the most fundamental in all early house-building. The side walls are late devices. The primitive house was essentially rafters, and these old and ever-new savages, our soldiers, best preserve the tradition of the entire history of the race. The building of a house was the beginning and means of gaining security and power. The man who could say, *This is my house*, was the leader and lord of others. And the best house made its owner the best man. The primitive house was made of four poles, leaned, crossed, and bound together, two here and two there, at the top, the points, when crossed, sticking out like the letter V. These two letters, V, on the coat sleeve of a corporal, are called chevrons, and literally and etymologically mean rafters; they show who was first honored with military office. If the primitive householder had such a big and fine house as to have three sets of rafters, he was the sergeant. If later he had a gable-window, he was an orderly sergeant. If he had one-story only, the lieutenant had no bars to his shoulder



FIG. 17.—When poles, etc., are not to be found, other materials were used, but the pattern remains the same. Whites' early monastic settlement at Skellig, Michael Kerry, Ireland.

straps; if he had a second-story, he got one bar there, and if a third-story was his boast, he was made a captain, with two bars on his shoulder. Thus little traditional customs like buttons and bands summarize, for the evolutionist, the long-past history of the race. "The ontogeny repeats the phylogeny."

When poles and wood were accidentally not obtainable, and when exigency commanded, the round hut was patterned with great difficulty, in other materials,—as, *e. g.*, in the huts on the seashore of the whites' early monastic settlements at Skellig, Michael Kerry, in Ireland.

Such remains, and the huts of the charcoal-burners and the teepee-

tents of the soldier, are the relics of survivals of the round-hut period of our remote ancestors. It was early replaced by our Teutonic forebears, by the square style. More room was needed for the cattle, and so the rafter poles were merely widened out laterally and the round room or hall became oblong or square. This fashion was aided by the fact that the sparse population were surrounded by forests. Tacitus found the Germans living their lives, singly, in the woods, or in small communities,* and their descendants have preserved better than other peoples this separatist habit. From this cause flows their prolificity and ascendancy over others. Their seclusions and independence taught them virtue, some cleanliness and freedom from disease, etc., things that crowded folk can never learn or know. This is the genuine reason for Anglo-saxon supremacy in the world.

The Greek and Oriental house was, from the first, built for the purpose of housing people, not cattle. In the mild climate the cattle



FIG. 18.—The Oratory of Gallerus, still standing in England. The shape of this house, in stone, is the same as that made by bending sapling trunks and tying the tops together.

could run loose or be herded. In the north they had to be housed; that is the reason for the two types of houses. Today the Japanese house and every room in it is made so that the floor space may be exactly covered with tatami or mats, all of the same size—3x6 feet—the exact size required for a person when sleeping. The Greeks and other Oriental nations had a similar unit of measurement of floor space and house size called a *κλυη*, about $2 \times 1\frac{1}{4}$ meters. This word *κλυη*, indeed, later became the word for bed, and is the original of our word clinic, polyclinic, etc. The Teutonic house, on the other hand, was built for housing domestic animals, the cows, horses, etc., and every occidental house bears many signs of its origin, of the forgetfulness of ventilation and light, whence spring our so-called house-diseases.

*"Colunt discreti ac diversi, ut fons ut campus, ut nemus placuit," he says.



FIG. 19.—Siberian Chuckchee house, half stone, with pole rafters covered with skins.

At first our domiciliary ancestors bent their sapling trunks together, and did not cut them down. Hence the rafters were curved. There is actually standing today at least one type of such a house in Ireland, the so-called Oratory of Gallerus. But it is in stone! How difficult must have been the building! But tradition and fashion dictated. An interesting illustration of the continuance of this type of house, in its half-way stage, was given in a late issue of the *Popular Science Monthly*. It is the house of the Chuckchees, a tribe inhabiting the extreme northeastern coast of Siberia. The base walls are stone, with a wooden frame above covered with skins. Note the poles appearing as rafters.

It was early found that saplings of the first houses must be about 16 feet apart, and the two at the other extremity were also 16 feet apart. This had been found the necessary width for stabling horses,



FIG. 20.—Enlarging the old house by adding part of a "bay," and extending the roof over it. A house at Burscough, England.

cows, etc., when facing each other. For thousands of years the problem of the domestication of these animals was the all-controlling one with the Teutonic peoples, and the house was in reality a barn, built not primarily for the man, wife, or children, but to protect and control the cows and horses. Such a 16-foot house was called a bay, and late in the middle ages houses were bought, sold, and deeded by the bay, half-bay, (8 feet), quarter-bay, two-bay, three-bay, etc. When the house was enlarged by a half-bay, it was at first by a makeshift bulging or swelling, illustrated by the picture of a still-existing house at Burscough, England. When, later, your recent ancestors could have a window in it, they, and we, called it a "bay-window." Every kitchen in the land, being an afterthought, is a half-bay addition, and every house shows how bays, across, or at the end, half-bays and quarter-bays, have been added. Every house we see is written all over with its own thousand-year history. Our greatest of great grandfathers filled the walls of his "bay" with



FIG. 21.—When the sapling-rafters were cut off at the ground, they ran straight to the ridge-pole. "Teapot Hall," Scrivelby, England, still standing.

poles, brush, straw, peat, etc., and later with mud, stone, and finally with brick, etc. Vitruvius says, "First men erected forks, and weaving bushes between them covered the walls with mud."

The entrance door to the ancestral house was necessarily at the end and beneath the gable, facing the east, or the best light, windows being unknown. The ridge pole laid in the forks was the origin of our "16 2-3 feet make one rod, perch or pole."

When little trees were not left growing or standing in the ground, but were cut off, the rafters, of course, went straight, not curved, from the ground to the ridge-pole, and the house was shaped in cross-section, like an inverted letter V. An example of such a house is "Teapot Hall," Scrivelby, near Horncastle, England. The chimney is of recent date. The "space" at the angle near the floor, too small except for storing grain, etc., to enlarge which was one incentive

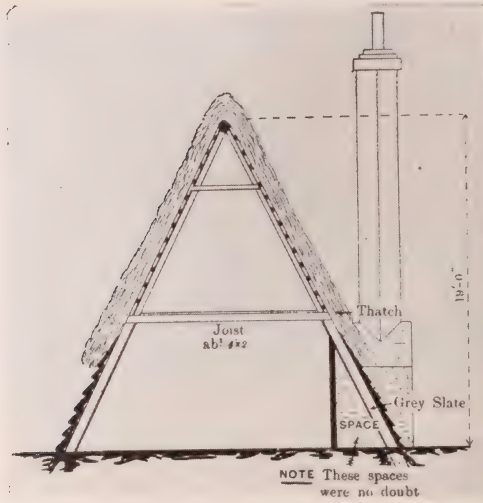


FIG. 22.—Cross-section of Teapot Hall. (The chimney is modern.)

for beginning the perpendicular side wall, and also to give better standing room, by elevating the rafters and the roof. These spaces finally grew into little rooms. The addition of rooms was also gained by utilizing the spaces about the old fire-place, or hearth, and partitioning them off for the pantry, scullery, etc. Finally such a degree of luxury was reached that the richer could have a double house, one end being used for the human beings, and the other for the animals, with some partition between the two. The ox-house

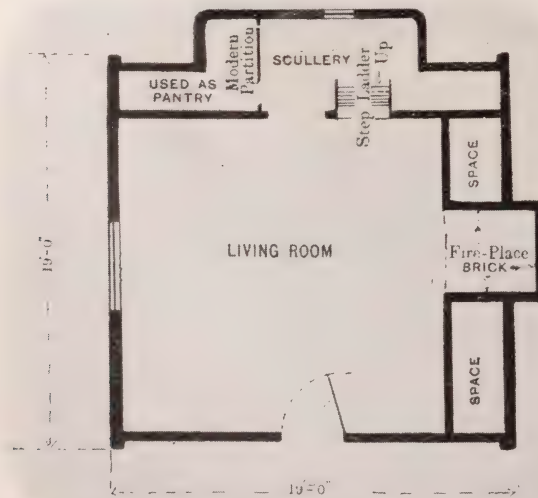


FIG. 23.—By elevating the roof and making perpendicular side walls, the waste spaces, etc., were utilized and more room gained.

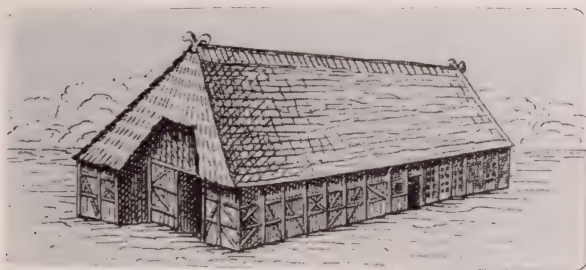


FIG. 24.—Typical Frisian or Saxon house, primarily an "ox-house." (The forks are becoming ornaments.)

or barn was thus separated from the fire-house or hall, so-called. The passageway between the two was the threshing floor, or simply "the floor," or thresh-hold. Hence our modern word "threshold." It was also called the entry. The typical Frisian or Saxon house, still widely used, is essentially the same as the old English, with slight improvements.

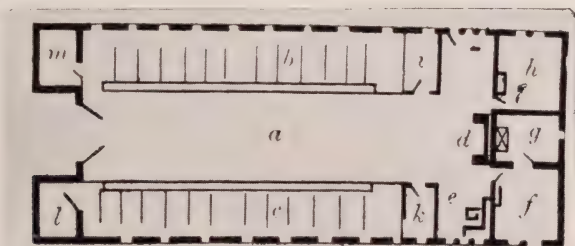


FIG. 25.—Ground-plan of Fig. 24, showing the combination of ox-house and fire-house or hall.

The inside of the original one-roomed house of all early times is illustrated by a mud-walled house still standing at Great Hatfield, England. The walls are two feet thick. The "speer" was a screen protecting from the drafts of the door those sitting about the hearth.

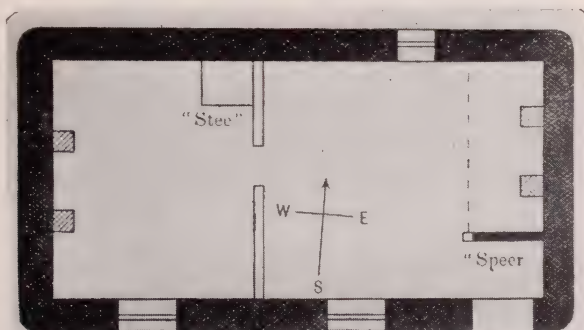


FIG. 26.—Mud-walled house, still standing at Great Hatfield, England. The walls are two feet thick. The "speer" is a screen, protecting from drafts; the "stee" is the ladder to the upper story.

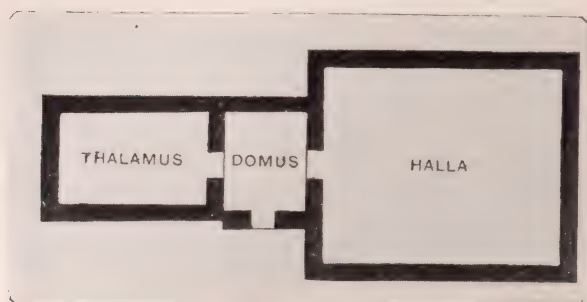


FIG. 27.—Method of adding a living-house to the hall by a half-bay. Kensworth Manor House.

The “stee” was the ladder going up to the upper story, which was five feet high. The doorway and lower room of all old-time houses was about six feet, showing that few men were as tall as that. A living house was added to the ox-house by a sort of half-bay. It is illustrated in the old Kensworth Manor-house. A more common way was that carried out by the owner of a house at Burscough. A half-bay chamber was added behind the hearth-stone, another at the opposite corner, with a buttery, and,—a remarkable fact,—a “latrina.” The English word *hall* has always denominated the single large original room of the one-roomed house. As, one after another, parts of this space were partitioned off, the women’s “bower” first, and then other rooms, there was finally left only the tiny part of the house we now call “a hall.” It is all that is left of the noble English hall.

The greatest step in advance in the history of architecture was the addition of upright vertical walls, whereby the roof was raised, space inside increased, and the second-story made possible. It was doubtless a slow process, and the manner of effecting it is shown in the section of a barn at Bolsterstone, England. The tie-beams were lengthened outwardly, and long beams, the pons or pans, were laid, the rafters placed between the pans and the ridge-tree. The sides were then built up with stone, mud, brick, etc., shown in a barn at Treeton,

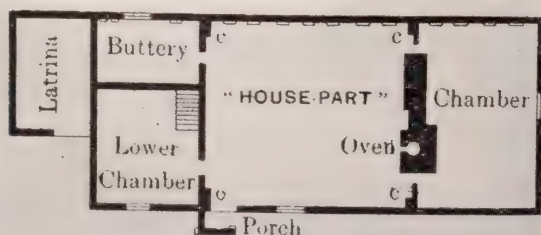


FIG. 28.—A half-bay chamber was added to this house behind the hearth-stone, another at the opposite corner for the buttery and “latrina.”

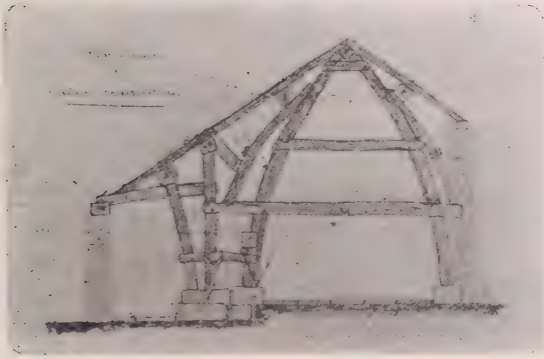


FIG. 29.—Method of making upright sides or lower story walls and increasing the room space. Barn at Bolsterstone, England.

England. Often the old wooden structure was entirely covered by the new walls, as is shown in the "crucks" of a demolished house.

Until sawed boards came into common use there were no floors, and no second stories. Wood was plentiful in the middle ages, and while it was so, split oak tree trunks were used as posts, tie-beams, etc., and as walls set closely together. When timber became scarce the spaces between the timbers were enlarged and filled with the cheaper materials at hand. The closeness of the timbers is thus a criterion of early date. Finally concrete, stone, brick, etc., became the entire walls. Wooden and stone shingles came into use in the 14th century. The transformation of the "stee" into the stairway, or the perpendicular ladder into the slanting staircase, was slow, and is illustrated by the picture of a stair at Upper Midhope, in which the first five steps are perpendicular, while the upper ones are inclined a little, and supplied with a hand-rail. The stairway was often

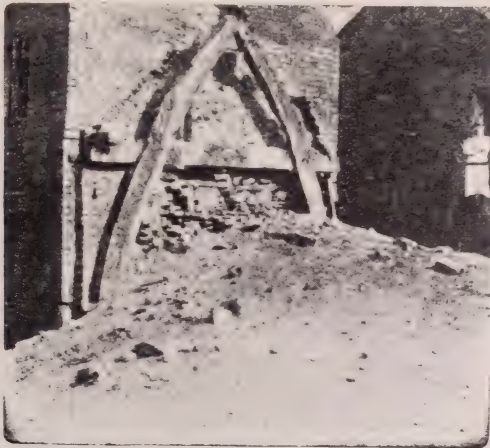


FIG. 30.—Photograph of a demolished house with the old crucks built about with new walls.

on the outside. Two story-houses began to appear in the 12th and 13th centuries. Wainscoting began in the 13th. Tapestry had long been used by the rich as protection for the beds from the drafts and dampness of the thick stone walls, and also, later, as ornaments. These tapestries finally and recently became wallpaper, pasted on the walls, although still advertised as "paper-hangings." As late as the 14th and 15th centuries the hall-floor was not boarded, but was made of packed earth, sometimes with flagstones. Upon this floor straw or other litter for beds was thrown, especially about the sides.

The cheerlessness of these dark halls or homes made men seek a common meeting place at some neighbor's house, who could afford



FIG. 31.—The ladder to the upper story in process of becoming a stairway.

a better fire and seats, and perhaps better wine or beer, and thus gradually grew up the village inn, the beginnings of our hotels and drinking "saloons." The allurements of these modern places show how history repeats itself.

The struggle for warmth dominated the history and development of northern civilization. In all the previous history of animal life it had also been the controlling necessity, and nature had secured the requisite and uniform 98.6 degree temperature of the human body by a thousand means and devices of which we are ignorant. Man carried on the struggle against cold chiefly by the house. He could not get his body well and properly clothed, and so he and his family and his animals were huddled together in the warm hut, which was made as air-tight as possible. There was but one door, no windows, and few air holes. The heat of his cattle's bodies also helped to lessen

the cold. As late as the 16th century the house was called the "fire-house," suggesting the recent introduction of the fire-place, an improvement over the hall without a fire.

The primitive chimney was a hole in the roof for the escape of the smoke of the fire-place or hearth. That the smoke penetrated the whole house is evident from Chaucer's line of the "Nonne Prest:": "Full sooty was hir bour, and eek hir halle." The meats and many kinds of foods were hung over the heads of the people below,—the origin of our smoked hams, bacon, dried pumpkins, corn, etc. The custom still exists in many farm houses of our country and time. Turf and charcoal were the more common kinds of fuel, and the dull-red glow gave the only light to the family sitting about it. The poet Spencer, in describing the typical delver of medieval life, says:

"At last he came into a gloomy shade,
Covered with boughs and shrubs from heaven's light,
Where as he sitting found, in secret shade
An uncouth savage, and uncivil wight
Of grisly hue, and foul, ill-favored sight.
His face with smoke was tanned, and eyes were bleared;
His head and beard with soot were ill bedight.
His coal-black hands did seem to have been seared
In smith's fire-spitting forge; and nails, like claws, appeared."

The first improvement in chimneys was a sort of projection or hood over the hearth, with a half-chimney leading, first, towards, and later to, the hole in the roof. Improvements followed until the true chimney was built without or in the house wall, at first only to the roof, with slits for the escape of smoke. Finally it reared its head above the roof. A board or space above the hearth and chimney was used for the hats, and beneath it were the hooks for hanging the mantles to dry, whence our word "mantle-piece." "On the borders of Russia there are still to be found by the chance traveller, or the peddler from Archangel, many Savu-pirrti, or smoke cottages. These have huge open fire-places, a pleasant feature, one would say, in a frigid land, where timber is unlimited.

"But, alas! they are without chimneys, and the smoke which has no escape, save chinks and crannies, settles under the roof to be driven downward by small drafts. From this cause many of the dwellers in these homes become blind. The idea of the 'smoke cottages' was taken centuries ago from the neighboring Letts."

Personal cleanliness of body for one or two thousand years was practically unknown or unthought of in all Europe. Michelet says that for 1,000 years of the middle ages not a man or woman in Europe took a bath, and this is undoubtedly a very conservative statement. A large portion of Americans do not bathe more than once or twice a year. There was probably very little of clothes-washing in the early times among the better classes, and none among the lower. Doubtless two if not all three of the kinds of lice that are parasitic upon the human body were borne about by almost all men and women. Flies were everywhere. Latrines were at first unknown and even in comparatively modern times the few best of them

were as bad as our worst today. Bedbugs were in every bed so-called, or miscalled, even in the best and most costly.

Physicians well understood how such conditions made it inevitable that contagious diseases were everywhere prevalent, and prevented the increase of population which came at once in the last one hundred or two hundred years when a little personal and household cleanliness, and freedom from lice, checked the multiplication and dissemination of the germs which caused the scourging infections which cursed the long dark history of 1500 years.

The water supply in olden times was always difficult and usually impure. The "pits" for latrines were dug near the walls, and oblivious of the conditions of drainage. The existence of a spring or well doubtless caused the location of house or castle near by, as a primary need was always water.

The history of domestic architecture and sanitation in England makes it plain that progress in these things was almost exclusively due to the initiative of the king, and then spread to his nearest underlings, thence to the richer of the private citizens. One must not err, however, in thinking that the example thus set had many imitations until the last century or two. In the reign of Henry the Third, the first attempt at underground drainage was made. The kitchen refuse, dirty water, etc., had been carried through the great hall at Westminster, until, in the language of the King's Writ, "the foul odors arising from them seriously affected the health of the persons congregated at court," and an underground drain was devised to carry them into the Thames.

The first conduit of water was established in London in the 13th century, but long after this the water-carriers hawked water about the streets.

In old manuscripts and chroniclers of the Arthurian stories, water for washing the hands and face was brought to the guests after the removal of the armor, and before the feast. In the later middle ages there were a few houses which had, *in the screens*, as it was called, a lavatory or washing place, with a cistern of water and a sideboard or recess. Edward the First introduced the luxury of baths, and in some houses of the next century there were *camerae privatee* of a very crude kind. These "Garde-robcs" or "privy chambers" were usually in the best houses of the 14th century, but of course without drainage, sometimes with pits, sometimes without.

"Eating off the same board," or platter, was the rule, i. e., one plate served for all. Our modern custom of taking wine with one another, or from the same glass, is a survival of the old custom. The English said grace before and after meals.

The custom of bringing basins, ewers and napkins to the guests before the dinner, prevailed up to the last few centuries. After the meal the hands were washed again; the food was handled with the fingers, and the second washing of the hands was thus made necessary. The dining table was made of board laid upon trestles. The

meal over, the boards and trestles were taken away. The seats were wooden benches. Two meals a day was the rule; dinner at about ten or eleven, and supper at five. Knives and spoons came into use about the 14th century and forks much later. In the time of Richard III. the noblemen pulled their knives from their wallets when they began to eat.

The table was set near the wall, the diners usually next to the wall, the front of the table open without seats, for the approach of servants. At great feasts, jesters, mimics, musicians, etc., amused the company. The chief ornament of the dining table was the huge salt-cellar, set in the center of the boards. Next to it in importance was the "ship," or "nef," a dish in the shape of a ship for holding spices and sweetmeats. The "castor" of our childhood days is probably its modern representative. The mazer bowl completed the "china" outfit,—a large vessel from which all drank in common. The meats and other foods were placed either on the table or on wooden plates. The bones and refuse food were thrown by the diners at the dogs hungrily awaiting their share of the feast. Wooden trenchers, the first form of plates, are preserved as relics in England today, hollowed on both sides, and then it was turned over for the pudding. They show, of course, no signs of the use of knives and forks. The fingers made no marks!



FIG. 32.—From a piece of Bayeux tapestry, showing Harold's Manor House, with outside stairway, etc.

The modernness of the kitchen is shown in the fact that in old pictures the cooking is represented as carried on in the open air outside the hall, and even now the baking, even in the United States, is sometimes done in ovens outside the house. In common life the hearth or fire-place had been and long remained the sole cooking and warming place. An old picture of Rosham Church and Harold's Manor House, at Bosham, in Sussex, from a piece of Bayeux tapestry, is particularly illuminating. The outside stairway, the dogs waiting for bones, the drinking horns, impossible to be cleaned, all speak of the manner of dining of our ancestors for many centuries.

Henry VIII. issued an ordinance against his scullions lying about naked and filthy. The Courtiers and Commoners stank so that

Wolsey kept an orange filled with salts against the pestilent air, Erasmus ascribes the plague and the sweating sickness to filth, especially to clay floors covered with rushes under which were buried beer, grease, bones, excrement, etc. Thomas à Becket was blamed with luxury because the company room had fresh straw every day. Queen Elizabeth's room had straw. In 1680 the courtiers went to Potsdam on stilts because of the mire and filth.

The development of the church building is not a part of our subject, but may be glanced at. The word church itself shows the history; it meant simply the lord's house, or the ruler's house, and it was naturally the town hall, public hall, or basilica of the district or community. It was at once a temple and court of justice, the place where the local council met. The forms of these buildings are the same as those of the pagan basilica. The old English word *castel*, or *castle*, meant *village*. The watch-tower, for keeping watch or guard over the country about, was on the highest point, whence the signals of danger were given and received. The church tower was also used as a watch-tower, raised on high above the lord's hall for the same purposes as the watch-tower. The original use of the bell or bells in the belfry was to guide travelers home in dark nights, a light also aiding. The bell was also used to summon the burgesses together, and for sundry other purposes. The churches were thus the only public or municipal buildings in English towns during the whole period of the middle ages. They were at first, and for a long time, used not only as courts of justice, but as places of resort for the transaction of any kind of business. The markets in Europe are often still about or in front of them. Jesus drove the money-changers out of the temple. The history of the church has been in one respect a decline of secular power, until now the church building is used solely for religious purposes. The royal arms have at last been removed from all English churches, but the origin even of the most ornate is clearly the hut of boughs or poles. Take the belfry or watch-tower away from many a dear little English church, and the added "half bays" from the hall, and the original bay or hall is the beginning form. Do you think those crosses on the steeple and at the ends of the ridge-poles are Christian in origin? They are thousands of years older, and are the Vs or forks of the rafters made into ornaments and transformed symbols. The old Swede's church at Wilmington, Delaware, shows a quaint transition form, with its living room in the belfry, its watch-tower, its quarter-bays, etc. The most ornate cathedral, if it could be traced back, would show, in its evolution, the tree, the rafters, and the core of the single hall. It is plain that the church tower or belfry is the old round pole tent set before and fused into the later "hall," become church.

Our American domestic architecture is derived from English models. At the first there was extreme simplicity as in the little house of Myles Standish, with its double-pitched roof—a still common proof of the difficulty of raising the roof and getting a second-

story. The later open-air verandahed southern style of the summer and warmer climate, as illustrated in Washington's Mt. Vernon house, shows how the fresh air and shade was sought, without adopting the aula of the Mediterranean house. Because we are English and Northern, the hall could not be forgotten, and the central pillared court was, as it were, put on the outside. In Mexico the house returns frankly to the Mediterranean model. The climate invites the patio or open central court. In New England the rigor



FIG. 33.—Washington's Mt. Vernon house, the open central court of the Mediterranean house, is, as it were, put on the outside of the house.

of the climate forced the addition of numerous bays, and half-bays, and brought the kitchen, woodshed, barn, etc., into unity and under one roof. All are frequently connected so that the farmer or housewife does not really go out of doors in the severest weather to attend to the cattle, horses, hens, etc. It has taken us a thousand years to get the barn separated, and at a distance from the house, to which it was long united; and at first house and barn were all one, as we have seen. In the South, even now, the kitchen often remains a separate building.

(To be Continued.)

MEDICAL AND SURGICAL PROGRESS.

DIAGNOSIS.

IN CHARGE OF
ALBERT E. TAUSSIG, M. D.

SOME RECENT CRITICISMS OF THE ORDINARY METHODS OF GASTRIC ANALYSIS.

1. UEBER EINE NEUE FORM DER MOTILITAETSPRUEFUNG DES MAGENS.—H. Strauss und J. Leva (*Deutsche med. Wochenschr.* 1907, No. 29).
2. EIN BEITRAG ZUM MECHANISMUS DER MAGENVERDAUUNG.—P. Gruetzner (*Pflueger's Archiv.* 1905, Vol. 106, Nos. 10-12).
3. ZUM MECHANISMUS DER MAGENVERDAUUNG.—A. Scheunert (*Pflueger's Archiv.*, 1906, Vol. 114, Nos. 1 and 2).
4. UNTERSUCHUNGEN UEBER DIE SAFTABSONDERUNG UND DIE BEWEGUNGSVORGAENGE IM FUNDUS UND PYLORUSTHEIL DES MAGENS.—K. Sick (*Deutsch. Archiv. f. klin. Med.*, 1906, Vol. 88, Nos. 1-3).
5. DIE BEDEUTUNG DER SCHICHTWEISEN AUFFUELLUNG DES MAGENS FUER DIE KLINISCHE DIAGNOSTIK.—O. Prym (*Ibid.* 1907, Vol. 90, Nos. 3 and 4).
6. ZUR DIAGNOSTIK DES MAGENCHEMISMUS.—V. Bardenstein (*Berl. klin. Wochenschr.*, 1905, No. 33).
7. DIE ENTLEERUNG DES MAGENS, DIE TRENNUNG DES FESTEN UND FLUESSIGEN, DAS VERHALTEN DES FETTES.—O. Prym (*Muensch. med. Wochenschr.*, 1908, No. 2).
8. THE CLINICAL IMPORTANCE OF THE UNEVEN DISTRIBUTION OF HYDROCHLORIC ACID IN THE GASTRIC CONTENTS.—A. E. Taussig and W. H. Rush (*Boston Med. and Surg. J'l.*, 1908, No. 3).

During the past fifteen years repeated attempts have been made, by refinements in method, to obtain a clearer notion of what takes place in the normal and diseased stomach and to utilize this information for diagnostic purposes. A great number of methods have been proposed for determining more accurately the hydrochloric acid in the portion of the stomach contents obtained by means of the stomach tube. Matthien and Remond have introduced a method, now widely used, of demonstrating the presence or absence of sluggish gastric motility or of hypersecretion by determining the total quantity of the stomach contents. The latter are withdrawn in part and then the stomach is washed out with 400 c.c. of distilled water. A comparison of the acidity of the portion first withdrawn with that of the wash water will give, by a simple calculation, if their assumptions are correct, the total quantity of the gastric contents. Sahli's flour and butter soup, it was believed, would give a similar result by means of the comparison of the amount of fat in the undiluted stomach contents with that in the wash-water. Strauss and Leva's method, proposed last year, is for all practical purposes identical with Sahli's, with the exception that they avoid one of Sahli's sources of error by substituting crackers of a known fat content for Sahli's flour and butter soup.

All of these methods, however, are based upon one assumption that recent work has shown to be fundamentally false. It is obvious that we can draw accurate conclusions as to the acidity, etc., of the gastric contents from the examination of a portion withdrawn through the stomach tube, only if the stomach contents are fairly homogeneous. Only in this case will the portion withdrawn through the tube for examination offer us a fair sample of the whole. Until recently this general homogeneity of the stomach contents was generally assumed by clinicians. Thus v. Mering in 1903 declared the most important function of the stomach to consist in mixing intimately the food it contains. In 1905, Vierordt and Sahli made similar statements and in the 1907 edition of his text book on stomach diseases, Boas implicitly makes the same assumption. Recent work, however, has shown that the gastric contents are rarely if ever homogeneous. The first observations made in this direction some twenty years ago by Ellenberger and his pupils were ignored until they were repeated more recently by Scheunert and by Gruetzner. The latter fed various animals (frogs, rats, rabbits, dogs, etc.) with food, the successive portions of which were of different colors. At varying intervals the stomachs were tied off, removed and plunged into a salt and ice mixture. The mushy contents, frozen solid and cut into sections, showed always a definite stratification. The different portions of the food, far from being intimately mingled, could be seen in layers, separate and distinct, one above the other.

All of these experiments were done with solid food. It might be thought that a liquid meal would result in greater homogeneity of the gastric contents. Prym⁷ has investigated the behavior of Sahli's flour and butter soup in this respect. Dogs were given such soup, to which blue litmus had been added. At varying intervals the stomachs were tied off, cut out, frozen solid and cut into sections. The central portion and that near the cardia were usually found still blue in color, the rest having been turned red by the hydrochloric acid. Different portions of these contents were cut out, thawed and their acidity determined. It appeared that the degree of acidity was greater at the periphery of the mass than at the center, and decreased from the fundus toward the pyloric end. All of these observations show that the different portions of the gastric contents not only do not represent a homogeneous mixture of the food taken, but that they contain various amounts of the hydrochloric acid secreted by the mucosa.

It is clear, however, that these results cannot without verification be applied to human beings. Prym administered Sahli test meals to a number of patients, and expressed the stomach contents through a double tube with one opening at the tip, the other 10 cm. higher up. In this way he was able to get gastric contents simultaneously from different parts of the stomach, and found that the two portions varied widely in acidity. Still more beautiful work along these lines was done by Sick.⁸ He used a stomach tube, ingeniously constructed, which enabled him at will to obtain gastric contents from fundus or pyloric portion. He found that in man, after a Sahli test meal, the acidity of the pyloric gastric contents was very much less than that of the fundal portion, and that, therefore, even after a liquid meal, the stomach contents are far from homogeneous.

It would seem, then, that the notions, generally accepted, of the processes that take place during gastric digestion require considerable modification. The observations referred to, together with those of Cannon and others, indicate that what happens is somewhat as follows. The fundus of the stomach plays the double part on a receiving and a secret-

ing organ. During digestion its lumen is separated more or less completely from that of the pyloric portion by a definite constriction dividing the stomach into two unequal parts, and offering considerable resistance to the free interchange of contents. The food as it is swallowed is received into the fundus, successive portions lying one above or in part within the preceding ones. The gastric juice does not entirely penetrate the semi-solid food mass, but attacks chiefly that portion which lies in contact with the mucous membrane. This portion becomes digested and liquefied and is transported to the pyloric portion, where the process is completed. Meanwhile the interior of the mass remains alkaline and continues to undergo amylolytic digestion under the influence of the swallowed saliva until the removal of the peripheral portion exposes the more central parts in their turn to the action of the gastric juice. The degree of acidity of different portions of the gastric contents must, therefore, vary widely. The peripheral portion of the fundal contents, since it consists of nearly pure gastric secretion, is most strongly acid, the pyloric contents are less so, while the interior of the food mass in the fundus becomes acid last of all. Incidentally, these observations explain how salivary and peptic digestion can go on simultaneously in the stomach.

In spite of all this, one might suppose that even though the undisturbed chyme be not homogeneous, the violent retching attendant upon the use of the stomach tube in ordinary clinical work may cause such an intermingling of the stomach contents as to obviate this objection in practical work. That this is not always the case was shown by Bardenstein, and later in a somewhat different manner by Taussig and Rush. It appeared that after all the stomach contents, obtainable by the methods ordinarily used, had been withdrawn a further sample could be obtained by special procedures. The acidity of this second portion often differed considerably from that of the first, showing that clinically, too, quantitative results obtained by analysis of the stomach contents must be interpreted with great caution. The upshot of the whole matter seems to be that while the simpler old-fashioned methods, based upon empiric observation, still hold good, the more refined methods of analysis, when applied to gastric contents, are often deceptive and rarely worth while. The Ewald-Boas breakfast consisting of tea or water and toast still remains the best test meal. From it we can obtain a trustworthy, if somewhat vague notion of gastric motility and the presence of great hyperacidity, subacidity or anacidity give us valuable information regarding gastric secretion. The methods of Matthien and Remond, Sahli, Strauss and Leva and the rest are, however, based upon erroneous assumptions and together with the more elaborate analytic methods applied to the gastric contents have no clinical value.

THERAPEUTICS.

IN CHARGE OF
WM. ENGELBACH, M. D.

BIER'S HYPEREMIA TREATMENT OF PULMONARY TUBERCULOSIS.

1. The Mechanical Treatment of Pulmonary Tuberculosis by Hyperemia and Acceleration of the Lymph Stream Induced by the

Pulmonary Suction Mask.—E. Kuhn (*Folia Therapeutica*, October, 1907).

2. Experiences with Kuhn's Suction Mask in the Health Resort at Slawentzitz.—Stolzenburg (*Muenchener Med. Wochenschrift*, No. 16, 1907).
3. The Increase in the Number of Red and White Corpuscles and Haemoglobin by Means of the Suction Mask, and its Relation to High Altitudes.—Kuhn (*Muenchener Med. Wochenschrift*, 1907).
4. Ibid.—Grober (*Congress of Medicine*, Wiesbaden, 1907).
5. Roentgen Ray Pictures of Position of Diaphragm with Suction Mask in Action (*Deutsche Med. Wochenschrift*, No. 37, 1906).
6. Bier's Hyperemia Treatment of Pulmonary Tuberculosis.—Willy Meyer (*Medical Record*, November 9, 1907).
7. Ibid.—Stolzenburg (*Penn. Medical Journal*, March, 1907).

The suction mask has been tested for the past two years on a large number of patients in the First Medical Clinic of the Royal Charite Hospital in Berlin, and in other public hospitals. (2) It has also been introduced into many health resorts, sanatoria, etc., in Germany. The advantages of the treatment and the experience which has been gained from its use may here be briefly summarized. (1) Perhaps the most striking feature about the use of the mask is the immediate change in the type of respiration which occurs. Owing to increased negative pressure in the thorax, the diaphragm is drawn by suction in an upward direction, and therefore participates but feebly in respiration. (5) Thus, a pre-eminently costal type of respiration is enforced, which gradually results in a considerable widening of the chest, especially of its upper part. Notwithstanding this widening of the thorax, stretching and emphysema of the diseased lung can not occur owing to the brake which is put upon diaphragmatic breathing. The lungs are even kept in a condition of rest, as, while the mask is being worn, the room at the disposal of the lungs for dilatation is less than with free, unimpeded respiration. Moreover, since respiration through the mask is, after all, but a practical application of the physiological "Mueller's experiment," each breath increases the intensity of the hyperemia in the lungs (passive hyperemia); for in the cycle of this type of respiration, inspiration is prolonged at the expense of expiration, and, therefore, the amount of blood drawn into the lungs during one inspiration can not be completely returned before the occurrence of the next. It is important to remember that with this hyperemia, unlike other passive congestions which, according to Bier, are associated with an injurious amount of lymphatic stagnation, the circulation of the lymph stream is maintained, and even accelerated; for at the same time that blood is drawn from the large veins into the lungs, the opening of the thoracic duct into the left angulus venosus becomes exposed to considerable suction, whereby the increased lymph supply, already present in the lungs in consequence of the pressure of the greater quantity of blood, is still further accelerated by aspiration. Respiration against resistance is also a valuable means of strengthening and developing the whole of the respiratory musculature, and, since the possibility of emphysema is excluded, is to be preferred to all other breathing exercises. To this must be added the absence of danger from hemorrhage from the lungs under the suction hyperemia. This fact has been gathered from experience with the mask, and is, besides, confirmed by the experiments of Bier in the treatment of wounds by strong suction. The hyperemia results, not from increased pressure from within, but from suction on the vessels from without, and the mask may even be employed for prophylactic treatment against hemorrhage, as, owing to the plethora of

blood in the vessels, the latter become better nourished and thick walled. The heart, also, is strengthened by better circulation of blood through it, and, when the mask treatment is not forced or too long continued, the heart may even be considerably disburdened of work by increase in the physiologic action of the inspiratory mechanism upon the pulmonary circulation; improvement is shown by the pulse tracing in conditions of cardiac weakness, by cessation of the murmur with the second pulmonary sound in mitral disease, and so on. (4) In consequence of the stimulation afforded by the rarefied air (diminished oxygen tension) to the blood-forming organs, a very considerable increase of red and white blood corpuscles and of hemoglobin often occurs, analogous to that which takes place at high altitudes. (3) Thus the patient, during treatment with the mask, also obtains certain advantages of high air; but he obtains these advantages under favorable circumstances, since the troubles of acclimatisation are dispensed with, and, owing to the increase in the blood elements, the oxygen-rich air of the lower altitude can better be used up; at the same time, a protection and a condition of quietude to the lungs is conferred which is not possible in the rarefied air of higher altitudes. As already observed, no injurious by-effects have manifested themselves. Slight headache may be complained of for a day or two, and, probably owing to the broadening of the chest and exercise of the respiratory muscles, trifling pains may be felt in that region, which disappear of themselves after a short time. As a rule, the patients so soon recognize the advantages and favorable results of this simple and easily comprehensible mode of treatment that they do not wish to be without it. Objectively, the following results may be observed: Improvement of respiration and dyspnea, considerable widening of the thorax, reduction of the frequency of respiration, cessation of cough, disappearance of expectoration, bacilli and rales, a more healthy color (owing to the improvement in the blood), increased appetite (the increase in the blood elements rendering possible the secretion of a greater abundance of bile and other digestive juices), and also, in consequence of the improvement in the whole blood and lymph circulation strengthening of the respiratory musculature and raising of the heart's power. It may, therefore, be said in conclusion that inspiration against resistance by means of the suction mask may be regarded as a most active agent in the prophylactic treatment of anemic or tuberculously disposed subjects. By it, a better state of development of the thoracic organs and their functions, and an increase in the number of blood elements are brought about; and the resulting hyperemia exercises beneficial effects upon the upper parts of the lungs, namely, those parts most disposed to tuberculosis.

INTERNAL MEDICINE.

IN CHARGE OF
JESSE S. MYER, M. D.

PANCREATIC DIABETES.—Cambridge (*Journal Surg., Gyn. & Obstetrics*, January, '08).—Taking into consideration both his own investigations and those of others, Cambridge concludes that at least 7 per cent of the cases of diabetes are pancreatic in origin, due to pancreatic disease, which can be demonstrated by macroscopical or microscopical examination of the pancreas post mortem. Since the development of his "pan-

creatic reaction" he has examined the urine of 48 cases of diabetes by this method, and obtained a positive result, suggesting that the diabetes was of pancreatic origin in 36 (75 per cent) of the patients. In 12 no reaction was obtained. Three of these were examined post mortem and no abnormality could be discovered. Two of the 36 cases were examined post mortem; one showed well marked interacinar pancreatitis, the other advanced fibrosis of the pancreas with calculi in the ducts.

He has divided his cases into three classes. 1. Those in which there was pancreatic mischief, probably secondary to some morbid influence reaching the gland by way of the ducts. 2. Those probably secondary to blood diseases or circulatory disturbances. 3. Those in which the diabetes was induced by malignant disease.

These three classes point the way to the therapy. In the first class—there is usually a long antecedent history of dyspepsia, or gastro-intestinal trouble, probably indicating a duodenal catarrh, or of attacks of jaundice of the catarrhal type, or of gall stones. Cases have been met with where the "pancreatic reaction" was positive one or two years before the appearance of glycosuria. Of four cases of biliary calculi with glycosuria and giving the "pancreatic reaction," three lost their sugar and pancreatic reaction after cholecystenterostomy. Gall stones should be operated on early, especially if there is a well marked "pancreatic reaction" in the urine.

The reaction is as follows: A carefully filtrated specimen of fresh urine is taken, and 40 cc. mixed with 2 cc. of strong hydrochloric acid (sp. gr. 1.16) in a flask fitted with a funnel condenser. The mixture is gently boiled on a sand bath for ten minutes, cooled in running water, and the contents of the flask made up to 40 cc. with distilled water. The excess of acid is then neutralized by slowly adding 8 grammes of lead carbonate. After standing for a few minutes the flask is again cooled and the contents filtered through a moist, close-grained filter-paper. The filtrate is well shaken with 8 grammes of powdered tribasic lead acetate, and the resulting precipitate removed by careful filtration. The lead in solution is now removed by passing a stream of sulphuretted hydrogen through the liquid for several minutes and filtering off the precipitated lead sulphide. The resulting clear liquid is next incubated at 37 C., to drive off the greater part of the dissolved gas, and when this has been accomplished, is carefully neutralized with decinormal sodium hydrate solution. After being diluted with an equal volume of distilled water, it is mixed with a small quantity of fresh cake (German) yeast and incubated at 37 C. to remove the fermentable sugar. At the same time a control specimen, which has been treated in exactly the same way, save that it has not been boiled with hydrochloric acid, is placed in the incubator, and from time to time samples of this are taken, filtered and tested for sugar by Kowarsky's method. When crystals of glucosazone can no longer be obtained, the original specimen is cooled, filtered and 20 cc. of the filtrate mixed with 0.8 grammes of phenylhydrazin hydrochloride and 2 grammes of powdered sodium acetate contained in a small flask, fitted with a funnel condenser. The mixture is boiled on a sand bath for ten minutes and then filtered hot, through a filter paper moistened with hot water, into a test tube provided with a 15 cc. mark. Should the filtrate fail to reach the mark, it is made up to 15 cc. with hot distilled water and stirred with a glass rod. After standing for 24 hours undisturbed the test tube is examined, and in cases of pancreatic diabetes a more or less well marked deposit of crystals will be found. Under the microscope these are seen to be small, fine, light yellow, flexible

sheaves, which when irrigated with 33 per cent sulphuric acid melt away and disappear in 10 to 15 seconds after the acid first touches them. On being collected and purified by recrystallization they are found to melt at about 160 C. They can be distinguished from glucosazone crystals by their appearance under the microscope, their ready solubility in 33 per cent sulphuric acid, and their melting point.

APPENDICITIS AND ULCUS VENTRICULI.—Mahnert (*Mitteil. aus den Grenzgebieten der Med. und Chirur.* Bd. 18, v. 3, 1907).—The author first goes into a discussion of the frequency of appendicitis. He divides the acute and chronic process and subdivides the chronic cases into (1) those cases wherein there has been an acute attack which has subsided; (2) those latent cases, without many subjective symptoms, which have not yet experienced an acute attack, but which to our surprise show at operation pus formation and ulceration; and (3) that form which never comes to an acute attack but gives rise to a varying number of subjective symptoms, often referred to other organs, but whose objective signs are characteristic to one experienced in their recognition. These cases need never experience an acute stage. The number of such cases is enormously large and among them are many which have been classed as stomach or intestinal catarrh, abdominal neurasthenia, rheumatism of the abdominal muscles, hypochondria, etc.

The author then follows the observations and work of Payr, who has observed many cases of ulcer of the stomach and at the same time a diseased though not perforating appendix. Payr asserts that these stomach ulcers originate from emboli out of the thrombosed veins of the omentum, the appendix, or its mesentery, and claims to have produced like results on animals by injecting aseptic emboli into the veins of the omentum. Hemorrhages and ulcers of the stomach which often showed the typical funnel shape of the peptic ulcer resulted. A number of cases from the author's clinic are cited, including four post mortems and several operations together with quite a number of unoperated cases of "stomach trouble" in which the diagnosis of appendicitis with subsequent ulcer was made. He therefore advises that every case of chronic appendicitis should be operated upon as soon as possible, urges upon the physician a thorough stomach examination in such case and asks the surgeon not to neglect a thorough exploration of the stomach and its surroundings when performing an appendectomy in a case which has given decided "stomach" symptoms.

THE ETIOLOGY OF DENGUE FEVER.—Ashburn & Craig (*The Journal of Infectious Diseases*, Vol. IV., No. 3, 1907).—The authors have studied the disease in the Philippines and reached the following interesting conclusions: 1. No organism, either bacterium or protozoon, can be demonstrated in either fresh or stained specimens of blood with the microscope. 2. The red-blood count in dengue is normal. 3. There occur no characteristic morphologic changes in the red or white corpuscles in this disease. 4. Dengue is characterized by a well marked leucopenia (the lowest count was 1,200 per cm., the highest 4,860 per cm.), the polymorphonuclear leucocytes being decreased, as a rule, while there is a marked increase in the small lymphocytes. 5. No organism of etiologic significance occurred in broth or citrated blood cultures. 6. The intravenous inoculation of unfiltered

dengue blood into healthy men is followed by a typical attack of dengue. 7. The intravenous inoculation of filtered dengue blood into healthy men is followed by a typical attack of the disease. 8. The cause of the disease, is therefore probably ultramicroscopic in size. 9. Dengue can be transmitted by the mosquito, *Culex fatigans*, and this is probably the most common method of its transmission. 10. The period of incubation in experimental dengue averages three days and fourteen hours. 11. Certain individuals are absolutely immune to dengue, as proven by experiments. 12. Dengue is not a contagious disease, but is infectious in the same manner as yellow fever and the malarial fevers.

ORTHOPEDIC SURGERY.

IN CHARGE OF
NATHANIEL ALLISON, M. D.

EARLY DIAGNOSIS OF POTT'S DISEASE.—Mouchet (*Ann. Med. et Chir. Infant.*, Feb. 15, 1906).—The classical symptoms of Pott's disease, i. e., kyphosis, abscess and paralysis, appear as a rule, long after the diagnosis should have been made by the physician. If one is to wait for any of these conditions to appear to make a diagnosis, he is at the same time neglecting treatment that if properly instituted will prevent their appearance in many of the cases. The author points out the necessity of making an early diagnosis, by calling to notice the following facts: Always there exists a premonitory period, short at times, but quite positive in its manifestations when a diagnosis should be made, depending on the history, which must be carefully taken from the parents, on the character of pain, remembering the fact that pain is felt in the abdomen and limbs and that a child will complain of sternal, epigastric or umbilical pain when the spine is the seat of disease. Again such children should always be examined entirely stripped of clothing and their attitude in standing and walking closely observed. The appearance of torticollis or scoliosis is quite suggestive. The flexibility of the spine should then be tested with the child lying on its face, the feet should be grasped and the curve of hyperextension observed. According to what region of the spine is affected there will appear rigidity. He says in any case of pain along the ribs, or radiating abdominal pain, place the child in ventral decubitus and examine the flexibility of the spine, and have the child stand and observe the position of the spine. Positive findings here, coupled with loss of appetite and restlessness, will aid much in the establishment of a diagnosis of Pott's disease before the appearance of bony deformity.

CHRONIC JOINT DISEASES TREATED BY TUBERCULIN INJECTIONS BY WRIGHT'S METHOD.—Ridlon (*Amer. Jour. Ortho. Surg.*, July, 1907).—A low tuberculo-opsonic index with local joint symptoms, may be accepted as evidence of joint tuberculosis. But a practically normal tuberculo-opsonic index, together with local joint symptoms, neither proves nor disproves joint tuberculosis. When the diagnosis of joint tuberculosis has been made a high tuberculo-opsonic index should be maintained, if possible. With a high tuberculo-opsonic index an operation for the removal of all or part of the local disease may be undertaken; not so with a low index. If use of the diseased joint lowers the opsonic index, the joint must be protected; if it does not lower the index, it may be per-

mitted; if it raises the index it should be insisted on. General elevation of the temperature following a tubercle injection indicated too large a dose. A persistent lowering of the index during treatment by tubercle injection indicates that the injection has been given at the wrong time, during what Wright calls the negative phase, instead of during the positive phase. He believes the tubercle injection treatment, when guided by the tuberculo-opsonic index, to be a most promising step in advance in the treatment of tuberculosis joint disease.

IODIN TREATMENT OF BONE INFECTIONS.—McCurdy (*Amer. Jour. Ortho. Surg.*, July, 1907).—In infected areas in the cancellous portions of bone, there is no reason why sterilization will not be followed by prompt and complete recovery. The writer concludes as follows: (1) Blood-clot organization is typified in the repair of the maxillary process after the extraction of teeth. Here we may extract many teeth, leaving holes of considerable size which are immediately filled in with blood, and even the patient never hears of them again. Why not larger cavities? (2) All infected cavities, either in the central canal or surface of bone, should be immediately sterilized with tincture of iodo (U. S. P.). (3) When wounds are effectually disinfected they may be expected to close entirely in from four to five weeks, regardless of their size. (4) Old sinuses injected with tincture of iodo, using a syringe with a nozzle long enough to reach to the bottom of the sinus, will in many instances close without operation. (5) Mild toxicologic symptoms may be noticed in 24 hours from sinus injections, but the constitutional effect is beneficial, in one instance controlling for a time disease of the lungs. (6) The syringe used by dentists for cleaning patients' mouths served him best. (7) Iodo should not be used in joints that have normal synovial membranes, but pure alcohol should be substituted. (8) The practice of packing sterile cavities with gauze at every dressing is, he thinks, wrong, since it breaks down and destroys blood clots and valuable plastic material thrown out by nature to rebuild damaged tissues.

PEDIATRICS.

IN CHARGE OF
ALFRED FRIEDLANDER, M. D.

REPORT OF AN EPIDEMIC OF GLANDULAR FEVER.—Clemens (*Brit. Jour. of Chil. Dis.*, Dec., 1907) had occasion to study an outbreak of glandular fever in a male orphan asylum, where all the cases were continually under observation. All the infected boys slept in the same dormitory and in beds close together. The epidemic occurred during the first three months of the year. The ages of the children infected were 6 to 13 years. The period of incubation was from seven to ten days. It is noteworthy that an extensive outbreak of varicella had preceded the epidemic of glandular fever, though none of the boys with glandular had previously had chickenpox. Blood findings: The opsonic index for staphylococcus albus was positive and high. The blood counts in most cases showed slight leucocytosis. Blood cultures were negative. In ten cases the eye-ground findings were positive, showing hyperemia of the discs in seven cases and optic neuritis in three. The glands, whose enlargement is pathognomonic of gland fever, are the superficial and deep cervical.

The axillary glands are usually enlarged and tender. The occipitals, mastoids, parotids and inguinal glands, were not affected in any of the cases. The author believes that the naso-pharynx is the seat of infection, and the staphylococcus the probable cause. In one of the cases there was an acute nephritis.

BACTERIOLOGY OF MENINGITIS.—Churchill (*Arch. of Ped.*, Dec., 1907) says that meningitis in early life is caused by a great variety of micro-organisms, chief among which in frequency are the meningococcus of Weichselbaum and the pneumococcus of Fraenkel. In epidemics, a large proportion of cases is due to the meningococcus; but even in epidemics from 11 per cent. to 22 per cent. show the pneumococcus. The meningococcus gains access to the system through the nose and throat, is widespread in its distribution, and produces a true meningococcus septicemia. The meningococcus is found in the nose and throat of healthy individuals living in close contact with meningitic cases of this type. Such individuals should be isolated, as by their presence they help spread the disease abroad. The type of meningitis can not be determined from the clinical picture, but by lumbar puncture alone. According to the author, the prognosis in the pneumococcic variety is more unfavorable than in any other type. The meningococcic type, according to the author, is contagious, and the meningococcic cases should therefore be quarantined; possibly also the pneumococcic.

EPIDEMIC ANTERIOR POLIOMYELITIS.—McCombs (*Arch. of Ped.*, January, 1908) has analyzed all the cases of poliomyelitis admitted to the Children's Hospital in Philadelphia, during the past four and a quarter years. From July 1, 1903, to July 1, 1907, twelve cases were admitted. From July 23, 1907, to October 24, 1907 (three months), eighteen cases were admitted. The author therefore concludes that there has been an epidemic of acute anterior poliomyelitis in Philadelphia; that the disease must be infectious. He finds that cases seen at the Children's Hospital did not differ from the ordinary sporadic acute anterior poliomyelitis. No accompanying meningitis was seen during the epidemic, although one of the former cases showed the symptoms. It did not happen that two cases were reported from the same house, although two came from the same neighborhood; and three-quarters of the cases during the epidemic came from an area of ten city blocks square. Three weeks elapsed before the onset of the second case of two reported from adjoining houses.

THE RELATION OF PHYSICAL TO MENTAL DEFECT IN SCHOOL CHILDREN.—Cornell (*Psychological Clinic*, January, 1908) calls attention to the fact that if it be true that backward children usually exhibit defect of some sort, it should also be true that the physically defective among ordinary school children should show sub-normal mentality. In order to demonstrate this fact, he made a careful study of the children in three Philadelphia public schools. The result showed that in each school and in each individual branch of study in each school, the healthy or normal children stood higher in their classes than the average children; and the physical defectives, as a class, stood lower than the average children. His figures show that the educational result in our public schools suffers a discount of at least six per cent. in the case of the physically defective children, as well as a waste of the time rightfully belonging to the normal

children. His work is only another proof of the value of medical inspection of schools.

EXUDATIVE PLEURISY IN CHILDHOOD.—Ssokolow (*Jahrb. f. Kinderheilk.*, January, 1908), as the result of careful clinical and experimental study, reaches the following conclusions: Free fluid in the pleural cavity collects at first in the lower lateral portion of the cavity. The exudation takes the form of a pyramid with the base on the diaphragm (crescent-shaped), with the truncated top at the lateral wall of the thorax, in the median or posterior axillary line. The author determined this fact through methods of clinical examination, by means of the x-ray, by pouring in various kinds of fluid into the pleural cavity, by means of anatomical studies, and by manometric measurements of the tension in the pleural cavity. The position of the fluid does not change with change in the position of the body, even in hydrothorax. The retraction of the lungs, which is most marked in those parts of the lungs furthest removed from the hilus, is the cause of the phenomena noted above.

NEUROLOGY.

IN CHARGE OF
SIDNEY I. SCHWAB, M. D.

MECHANISM OF A SEVERE BRIQUET ATTACK AS CONTRASTED WITH THAT OF PSYCHASTHENIC FITS.—Jones (*Journal of Abnormal Psychology*, No. 5, '08).—This paper, of a rather technical nature, is abstracted with the idea of presenting some of the later conceptions which have clustered about the term psychasthenia and particularly on the subject of psychasthenic attacks or fits, and the effort that is being made to form a sharper line of demarcation between the various sorts of attacks seen in epilepsy, hysteria and psychasthenia. The term epilepsy was used to cover so great a variety of attacks accompanied with unconsciousness, that there was danger of bringing the naturally bad prognosis of this disease into the question of the future course of many conditions which at bottom had nothing in common with it. Oppenheim deserves perhaps the credit of introducing the term psychasthenic convulsions, in describing certain attacks characterized by loss of consciousness, with or without convulsive movements. Spiller suggested the term attacks as being more precise but the term fit seems the more apt as embracing all the features found in them. Janet has applied the designation briquet attacks to the more common hysterical crises, in contradistinction to the elaborate performances described by Charcot. In the diagnosis of the nature of the fits we may collect evidence from the observation of the fit itself or from the examination of the patient during the interval period. If the fit is of the petit-mal type or grand-mal type the diagnosis is not as simple as if the fit were frankly hysterical.

Janet has called attention to this seeming paradox that unconsciousness itself, formerly thought to be so characteristic of epilepsy, is the one fact that serves to complicate our diagnosis. Heilbronner has remarked that the increase in our knowledge has only made the diagnosis of hysteria from epilepsy the harder as it has shown more and more of the usual symptoms associated with epilepsy reproduced in hysteria, so that now there is no longer a single symptom that can not be found in

fits other than epileptic. It is being recognized that there is in a grand-mal attack absolutely nothing in the nature of the attack itself to indicate its source. It follows that while in many varieties of fits it is possible to exclude epilepsy, it is hardly ever possible to exclude hysteria from observation of the fit alone. As a result of this advance in our knowledge the modern tendency has been to base the differential diagnosis, in doubtful cases, upon the investigation of the mental state of the patient during the free interval rather than upon the symptoms displayed in the fit itself. By means of the association reaction method Jung and Ricklin have obtained striking results in the differentiation of hysteria during the interval period. The keynote of this part of the problem is that if it is possible to discover what the author calls a disaggregated mental focus as an exciting cause of the fit then epilepsy is excluded absolutely. This can only be obtained by a careful analysis of the mental condition preceding the first attack, the information thus obtained is derived generally during a hypnoidal state. For recollection of events preceding an attack of this kind is usually lost. The author then relates an interesting case of this kind in which he was able to study the actual cause of an attack and to find out the actual mechanism of the fit. As he puts it, he was in the presence of a case of hysteria in the making. The study of the immediate mechanism of the fit is of the greatest importance in making a differential diagnosis. The importance of the distinction between the various sorts of fits is easily appreciated if the subject of treatment is considered. There can not be much doubt that many an epileptic has been untreated and many a psychasthenic or hysteric treated with the epileptic dose of bromide in the mistaken notion that fits are epileptic, if unconsciousness intervenes, and if certain classic symptoms are noted, and not if they are absent. This brings up the idea that perhaps the bromide medication given to the psychasthenic or hysteric may have but deepened the dreamy state so easily controlled by the subconscious and in this way made more or less permanent a condition which is of itself amenable to intelligent treatment. The author sums up as follows: In considering the differential diagnosis of fits of doubtful nature besides the careful observation of the fit itself and the investigation of the mental state in the interval periods, we may sometimes be able to obtain valuable indications from a study of the mechanism initiating an individual fit.

THE THEORY OF THE PERIODICITY OF NERVOUS SYMPTOMS.—Oppenheim (*Neurologisches Cent.* No. 1, 1908).—It is a constantly observed fact that symptoms of various kinds affecting the nervous system have the characteristic of appearing at various times with a certain degree of periodicity. Oppenheim quotes several interesting cases to illustrate this idea. Of interest is a case of cerebro-spinal lues, the attacks of pain and general symptoms showing a remarkable periodicity of twenty-four hours separating the well from the sick days. As illustrating this idea the author suggests that in the organization of the nervous system of certain individuals there is founded the disposition towards the periodic rhythmical appearance of pathologic symptoms which as a rule remain latent until they are rendered active by the occurrence of a process in the brain in the form of a focal disturbance.

PSEUDO-MYASTHENIA OF TOXIC ORIGIN.—Gowers (*Rev. Neurology-Psychiatry*, January, 1908).—This is a brief account of a peculiar symptom-complex observed in a man 38 years old. The chief interest

in the case lies in the close resemblance to a real myasthenia produced evidently by the inhalation of some poisonous gas, possibly petroleum fumes. The speech presented a typical myasthenic feature. When the patient began to speak his voice was good and articulation fair. As he went on speaking his voice became feeble and his articulation imperfect. He had great difficulty in moving his tongue and lips and after three or four minutes his articulation became so imperfect that his speech was unintelligible. The first failure was in the softness of the guttural k and in the linguals and dentals such as l and r. The orbicularis was paretic. There was little outward movement at the angles of the mouth when he attempted to smile. He fully recovered under rest and change of employment. After returning to his work again the symptoms reappeared. When he permanently gave up his work he remained practically well and he has had no return in two years.

CASES ILLUSTRATING THE EDUCATIONAL TREATMENT OF THE PSYCHO-NEUROSIS.—Prince—Coriat (*Jl. Abnor. Psychology*, Vol. 2-4, 1907).—The authors report a number of cases which have been treated, to show the effect of psychotherapy. The general therapeutic procedures which they followed were as follows: 1. Instruction of the patient in the nature of the symptoms and disease. 2. Fixed ideas, apprehension, erroneous beliefs counteracted, faulty habits of temperament and character corrected. 3. Individual symptoms suppressed by electricity, suggestion and other therapeutic means. 4. Rules given for the daily conduct. 5. Improvement of nutrition, moderate rest, and, in extreme cases, isolation from previous surroundings.

The nine cases which are quoted illustrating the application of the principles contained in these divisions responded readily, and from a therapeutic standpoint might be considered very successful. The only criticism that might be offered is the incomplete data furnished in each case. It might be suggested that further elaboration would be interesting.

LOSS OF COMPREHENSION OF PROPER NAMES.—Fry (*Journal Ment. and Nerv. Dis.*, October, 1907).—Fry reports a very interesting case of a form of aphasia that is rare in the reports in literature. In this case, following a trauma, the patient, an otherwise bright and intelligent young man, lost absolutely the power of using proper names. The loss of substantives, and especially proper names, was as complete as though the individual had never known any. The interesting thing about this case was that if the name were repeated to him he could say the word, or write it, but if asked such a question for example as "Who was George Washington?" the proper name did not convey any particular meaning to him whatever. The disability lasted about three weeks; at the end of that time names were coming back to him rapidly enough to give him the assurance that he would eventually recover. The problem of diagnosis and analysis in this case brings up the question of the difference between recollection and memory. In this connection the author has included in the article some quotations from Burr and others, which bring out clearly the distinction. The paper is a good example of a well reported clinical case and as such is worth reading.

DERMATOLOGY AND SYPHILIS.

IN CHARGE OF
J. J. HOUWINK, M. D.

NOTES ON THE TREATMENT OF HYPERTRICHOSIS.—Brocq (*Revue pratique des mal. cut., syph. et veneriennes*, No. 4, 1907).—There are only two methods of treatment for hypertrichosis that give good results: Electrolysis and X-ray treatment. In case of hypertrichosis involving a large area, it is hard to make a choice between these two methods, each having its advantages and disadvantages. The X-ray method requires less treatment and is not painful, but the result as to permanent cure is not certain; furthermore, the possibility of atrophy of the skin with teleangiectases and even ulceration cannot always be prevented. On the other hand, electrolysis requires a great many treatments, is painful and more expensive. The best method, in Brocq's opinion, is to let the patient decide upon the mode of treatment. Brocq does not agree with Leredde and Martial, who think that electrolysis is contraindicated in extensive cases of hypertrichosis, where the hairs are close together. He has cured several cases of this character by electrolysis, and urges its use, as every general practitioner can apply it with an inexpensive instrumentarium.

DAS ANDOLIN, EIN COCAINFREIES LOCAL ANESTHETICUM UND SEINE VERWENDUNG IN DER DERMATOLOGIE UND UROLOGIE.—Mayer (*Monats. für Pract. Dermat.* Band 45, No. 12).—Andolin was first introduced as a local anesthetic in dentistry by Wolff about a year ago. Mayer has experimented lately with andolin in operative urology and dermatology and recommends it highly. It is a combination of eucain, 0.5; stovain, 0.75; hydrochloricum, 0.008; and physiologic salt solution, ad., 100. The first two ingredients are well known as local anesthetics, the third as producing anemia, while the physiologic salt solution as a vehicle does not possess any action on human tissue.

The largest dose used by Mayer has been 10 cc. and he never noticed any bad results from these injections; still he cautions against the use of more than 10 cc. and bases this warning on his experiments on animals. The anesthesia produced by andolin is very deep, due to the vehicle, which allows the anesthetizing properties of the preparation to penetrate the tissue very easily. No bad effects on the tissue injected—such as edema, infiltration or necrosis—ever took place, and the preparation is absorbed very quickly.

Andolin can be sterilized without injury to the preparation; its use is unlimited in minor surgery, which is not the case with Schleich's solution.

Mayer has used this form of anesthesia in incision of purulent abscess, bubos, furuncles, Bartholinitis, in tamponading small cavities by pouring 2 cc. of andolin in the cavity before tamponading, in dilatation of strictures in the urethra, and before injections of strong solutions of nitrate of silver in the urethra, in cauterization with the paquelin, in phimosis operation, in excision of fibro-angiomata, and extirpation of atheromata.

ROENTGEN RAY IN EPITHELIOMA.—Pusey (*Jour. A. M. A.*, January 11, 1907).—The writer reports a series of 111 cases of epitheliomata treated with x rays more than three years previous to July, 1907. In

these 111 cases were included several hopeless cases with wide involvement of the orbit and others with extensive and very destructive lesions. Of these 111 cases 80 were cured and have remained well to day or have died without recurrence of the epithelioma. Of the remaining 31 cases, 2 cases were practically well, 17 cases distinctly benefited, while 12 were not benefited at all. However, 8 of these 12 cases were entirely hopeless from the start, even from a surgical standpoint. Counting the 31 cases, that were not radically cured, as failures, there remain 80 successful cases, a showing of 72%. The diagnosis was beyond doubt in every case—in cases where some doubt existed, a microscopical examination of the tissue was made. This record certainly shows the great value of the x rays in epithelioma.

OPSONIN AND VACCINE.—McConnell (*St. Louis Medical Review*, November, 1907).—McConnell protests against the use of the term opsonic treatment, and urges the expression vaccine treatment. Opsonin is some undetermined substance within the blood that influences bacteria in such way as to make them fit material for engulfment by phagocytes. We do not administer opsonins in any form to the patient, but introduce an emulsion of dead bacteria in order to stimulate the formation of the opsonins. Therefore the term vaccine treatment would be proper.

McConnell also saw good results from the use of the so-called stock vaccines, but in some instances he found the autogenic vaccines more satisfactory. As the obtaining of the opsonic index is a matter of much technical skill and much experience, he advocates watching the patient and note either improvement or lack of it, while a practical method is found in relying upon a definite cloudiness of the suspension. This method is as accurate as the measuring of the dosage by Wright's method.

THE THYROID AS A FACTOR IN URTICARIA CHRONICA.—Ravitch (*Jour. of Cut. Diseases*, November, 1908).—The author believes firmly that thyroid extract is a specific in chronic urticaria. The thyroid gland has the power of neutralizing poisons and products of auto-intoxication in the blood according to a large number of pathologists. In which way, however, is not well understood at present. Leopold, Levi and de Rothschild came to the conclusion that urticaria is often an expression of hypothyradism, and that the cutaneous lesions are due to an acute intoxication. In certain cases they got rapid improvement by thyrotherapy. Dr. Ravitch reasoned from the analogy that the thyroid being a much more active and necessary gland in women than in men and knowing that rebellious cases of urticaria are also more found in women than in men, came to the conclusion that in the majority of cases chronic urticaria was due to the disorders of the thyroid. Dessicated thyroids in combination with nux vomica were given in his cases, producing at once remarkable improvement, and later on, cures.

In cases where the thyroid glands are enlarged the writer recommends remedies which will allay stimulation and cause the secretion of the thyroid to diminish, as thyroidectin (blood of thyrosectomized animals), strophanthus, bromides, atropin and x ray.

CORRESPONDENCE.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

The recent communications delivered either before the Paris Congress of Medicine or before divers scientific societies, on the treatment of tuberculosis, leave nothing to be desired in connection with the many difficulties which beset the medical practitioner when treating this disease. His embarrassment is extreme, not only on account of the multiplicity of methods but, also, on account of his scepticism, which is quite formidable today and will be more so as the methods increase in number. Despite these obstacles to a better understanding of the disease, three hygienic procedures—repose, aeration, and alimentation—are of enough importance to engage our earnest attention at present.

What has become of the medicaments designated "specifics for tuberculosis?" Let us speak first of the serums. Those of Maragliano and Marmorek have had a short period of success due to a number of partisans with misguided enthusiasm; but, today, their popularity has fallen into abeyance because they are known to be productive, too often, of very serious accidents. Moreover, it would appear that an antitoxin does not suffice to neutralize a tuberculous infection; on the contrary, what is necessary is a product which would act on the lesions made by the bacilli themselves. As for the tuberculins, although they have raised even greater hopes than the serums, they also have little to register in the way of credit.

The tuberculin (T. R.), used at first by Wright and numerous others, was soon dropped as too dangerous. The tuberculin of Koch, the old tuberculin (T. O.), has not been used in France for some time; but in other countries its use is being revived. As to the tuberculin of M. Denys, of Louvain, the good reports of which we heard so much at the last medical congress, were seemingly only reports, for it is not nearly so efficacious as the tuberculin of Prof. Beranch, of Neufchatel, which today is enjoying considerable vogue in Switzerland. Finally there is the tuberculin from the Pasteur institute at Paris, which has recently been used at the Bligny Sanatorium in doses beginning with 1-250 milligram and progressively increased to 1-20 milligram. The results are not unfavorable, and we hope that the experiments will be the means of establishing a definite scientific posology, so that we may have a medicament, useful as a defense against tuberculosis.

Although the specific treatment of tuberculosis has not yet been discovered, the scientific investigators are not discouraged; therefore we hope their efforts will before long prove successful. In default of a specific treatment, certain adjuvant medicines have been highly praised and, we may add, they are of enough interest to warrant our attention. With no special reference to atoxyl, which was wrongly thought to be a specific in tuberculosis, to the paratoxin of M. M. Lemoine and Gerard, which is yet in the incipiency of experimentation and appears to give amelioration only in the first two stages of the disease, or to the divers organotherapeutic methods (extracts of the thyroid gland and suprarenal capsules, the juice of the plant, pulmonaria—lungwort,—and the hypophyses), it would be well to consider, briefly, the marine serum which is administered, in injections, after having been sterilized and rendered

isotonic. Used in small doses, about 50 centimeter cubes per week, in the apyretic tuberculous, it produces improvement of the appetite, increase of weight and a better state of the general health. On the contrary, when the dose indicated is doubled or trebled, a variable increase in the temperature, reaching at times to 105° Fahr., results; soon followed by a decided aggravation of the general condition.

More interesting is the recalcification method. Starting with the idea that the tuberculous are in a decalcified state and that tuberculosis and decalcification march hand in hand, treatment by recalcification has been sedulously followed. Although from a theoretic standpoint, serious objections have been urged against this method, it devolves on us to say that, from a practical standpoint, the results have been gratifying. The insoluble lime salts produce, in the organisms of the feeble, quantities of chloride of calcium. This salt has a good effect on the digestion and its action on nutrition is undeniable. The calcium salts are, moreover, the antagonists of the sodium salts; hence their favorable rôle with regard to the circulatory system in the tuberculous.

This short survey gives only a faint idea of the multiplicity of methods which have been extolled for the treatment of tuberculosis; but incomplete though it be, it will suffice to show how prudent one ought to be as to the correct interpretation of the published results of any one of them. M. Renon has wisely said: "Each new procedure for the treatment of tuberculosis, provided that it be inoffensive, is followed by satisfactory results," and, in fact, the faith of the doctor in the new method is soon transferred to the patient, who is not long in developing psychic factors favorable to a recovery. Therefore, it is not wrong to say that the real efficacy of any treatment for tuberculosis depends on its surpassing ameliorating qualities and the fact whether it has stood the test which only time can impose. But this much is true that all invalids and, especially, the tuberculous, imbibe an element of vitality from the fact that their wants are not being neglected, and that for their benefit are being used all the resources of inoffensive therapeutics. Surely this is better than abandoning them to the hopelessness and despair which no treatment—therapeutic nihilism—would entail.

Feb. 10th.

OBITER DICTA FROM FOREIGN JOURNALS.

THE DANGERS OF THE OPHTHALMO-TUBERCULIN REACTION.

Dr. A. Trousseau, in the *Journal de Médecine et de Chirurgie* for Jan. 10th, has the following to say on this vital subject: The noisy demonstration which has followed the advocacy of the ophthalmo-tuberculin reaction has made it my duty to mention the dangers following its use, if only to warn medical practitioners against what they really suppose to be a safe procedure and one that can not possibly result in their own mortification.

Despite the enthusiastic statements, amounting almost to asseverations, made before various medical societies anent the harmlessness of the ophthalmo-tuberculin test, it is well here to warn medical practitioners of the possibility of inconveniences, and even of perils, which might have a decided bearing on their responsibility as men of standing in the medical community.

Now the facts which have accumulated ought to cause some inquietude. I do not assert that the untoward cases are sufficient in number to make us abandon the method; but what I wish to convey is that the procedure should be limited to those patients in whom an exact diagnosis is of paramount importance. The conjunctival reaction does not invariably occur in the tuberculous (Chauffard's case) and may be manifest in the non-tuberculous (Truc et Mallet, Souques, Méry, Schenck et Seiffertz). Schiele has demonstrated that when patients have conjunctival granulations, the reaction is violent. The fallibility of the method, therefore, is an argument against its abuse.

After one drop of tuberculin is instilled on the palpebral conjunctiva, if the reaction is positive, lachrymation sets in after five hours; after seven or eight hours, the hyperemic conjunctiva secretes, and between 12 and 20 hours the irritative symptoms attain their maximum, and are followed by recurrence of the normal condition in the order just indicated. Though the symptoms are of no importance in the majority of cases, in others the reaction may be violent and persist for some days. Comby, impressed by these facts, has recommended a weakening of the solution ($\frac{1}{2}$ to 100). And let me add, his advice was the first given at the time the enthusiasm for the procedure was at its height. Sydney Stephenson (*The Ophthalmoscope*, Dec. 1st, 1907) has seen, after instillation with tuberculin, 3 cases of follicular conjunctivitis, which have persisted from 20 to 40 days, and Terrien (*Société d'Ophthalmologie de Paris*), a conjunctivitis lasting 2 months, which terminated by having the aspect of a tuberculosis of the conjunctiva. Barbier and Rénon have seen cases of conjunctivitis persist from one to two months.

It is evident that a conjunctivitis following an instillation of tuberculin is not always benign and, at times, may assume considerable gravity. I

myself have observed this in a number of instances. In May, 1907, I attended a child aged 7 years, who after an attack of measles, developed a phlyctenular conjunctivitis which improved in the course of 6 days with ung. hg. ox. flav. This child had had, in the beginning of November, a mild attack of bronchitis which necessitated his being confined to his bed for 4 days. The parents begged the attending doctor to try the Calmette reaction. The inflammation which followed was extreme and was accompanied by a very abundant secretion from the swollen lids. After 21 days the child was brought to me, and it required considerable time and attention to effect a cure. To my great surprise, on Dec. 8th he had a recurrence of phlyctenular conjunctivitis, more intense than the first attack, and though treatment was effective, I am nevertheless of the opinion that here was an unnecessary re-awakening of a predisposition of the conjunctiva to the disease, instigated by the tuberculin. The moral of all this is self-evident: the parents, firmly convinced that their son was tuberculous, though the doctor could not constitute any clinical signs of the disease, insisted upon a test which caused only inconvenience and suffering to their child.

At the Paris Société d'Ophtalmologie (Oct. 8th, 1907), M. Kalt reported a number of instances of a very grave nature. He presented a man who had had, since the month of April, an irido-choroiditis of the right eye and a sclero-keratitis of the left. A 1 per cent tuberculin instillation was followed by a hyperemia of the conjunctiva. Some days later there was considerable augmenting in the infiltration of the sclera and the cornea in the eye which had been subjected to the instillation, and soon the vision was reduced to a mere perception of light. Another case of interest is that of a child who had a tuberculous iritis. The instillation of tuberculin caused, at the end of 8 days, a serious exacerbation of the disease which, judging by its symptoms, would not have occurred without the test. With the mention of the next case which I saw only a short time back, I hope to influence others into my way of thinking—that in cases of ocular tuberculosis, the instillation of tuberculin is followed by grievous results. Recently I was called in consultation to a young woman whom I had already attended in October for a tubercle of the conjunctiva. Despite the diagnosis by biopsy, a $\frac{1}{2}$ per cent tuberculin solution was instilled in the eye. The reaction was violent during 8 days, after which the tuberculous foci invaded the entire mucous membrane; Dec. 12th, a month and a half after the test, there was a tubercle of the iris, though the latter was normal at the end of November. I know of another case of tuberculous iritis, which was greatly aggravated by an instillation where the reaction was nil.—[Translated for the INTERSTATE MEDICAL JOURNAL.]

MONTAIGNE AND THE MINERAL WATERS.

Dr. Delacroix has recently published an unusual thesis entitled, "Montaigne Malade at Médecin," in which he displays considerable

erudition and quite remarkable talents as a writer. According to the author, Montaigne's condition, which is attributed to a neuro-arthritis diathesis, was responsible for his inflexible opinions on war and science. "Montaigne," says Dr. Delacroix, "being a confirmed invalid, made a study of mineral waters during his lengthy sojourns at watering-places in France and Italy." The results of his observations are best summed up by the philosopher himself: "Do not deceive yourselves that the therapeutic virtues of the waters are of infinite value; about all they can do is to give you a limited amount of strength and relief. They surely cannot cure; they buoy up flagging spirits and a real or imaginary weakness, and sometimes head off the incidence of a physical or mental change." If Montaigne ever expected the waters to effect a cure in his case, it was on the theory that "they (the waters) are less artificial than drugs, for mineral water is natural and simple and, at the least, is not dangerous, though of small value generally and even, at times, worthless; a conclusion quite apparent when one notes the multitudes of people who frequent these places."

In regard to gravel Montaigne says that "when mineral water is taken in abundance (about 3 liters), it opens the passages, flushes the bowels, breaks the stones into pieces of which process I am certain, for before it takes place the stones feel large. Later I pass very small particles, these being driven out by the waters which dilate and open the passages. Finally, mineral water stimulates the liver." Here we have the chemical effect of the crumbling and dissolving of a calculus; the mechanical process of driving the particles without; the antiseptic results from flushing the excretory passages, and the action on congestion and engorgement of the liver. Montaigne never forgot, each day, to compare the amount of water drunk with the amount of urine passed. When the volume of urine passed was not equal to two-thirds of the water taken, he remarks that "the excess of liquid absorbed, after dilating and fatiguing the digestive tract, ends by increasing the pulmonary circulation; the important point is not how much water has been passed but how much less than the quantity drunk." And finally in his journal, Montaigne writes, "I was grieved to see that I was not passing a sufficient amount of water." Upon ascertaining that he had passed only one-fifth of the amount of liquid imbibed, he reduced the amount, "fearing lest it would stop altogether."—
[Translated for the INTERSTATE MEDICAL JOURNAL.]

RED CROSS NURSES IN JAPAN.

Major Fischer, in the *Archives de Médecine Militaire* (No. 11) gives very complete details as to the organization of societies for the health of the wounded soldiers in Japan. The account shows the remarkable advance over antiquated ideas and the complete transformation in the manners and habits of a people who, but a few years back, were as unprogressive as are the Chinese today. The innovation of women as

voluntary nurses had absolutely no connection with religious ideas, for had this been the case, they would have imitated the Buddhist nuns who have always obstinately refused to nurse men; and also would have run contrary to the antiquated edict which reads that no honorable woman shall nurse any man but her husband. In 1887, public-spirited Japanese, accompanied by their wives, traveled in Europe and made it their mission to study the various methods of the Red Cross nurses. They met princesses who were at the head of the nurses' corps and soon learned that nursing could be done without sacrifice of prestige. Directly these travelers returned home, royal princesses and members of the aristocracy, recognizing the many benefactions that they could bestow on the army, resolved to show the courage of their convictions by the intrepid act of devoting their lives to the wounded soldiers. Not only would they show to the people at large that such services are useful to the country, but also that the woman who devotes herself to so high a calling really elevates herself in the estimation of the public. Thus was founded the Red Cross Union which was composed of all the royal princesses and the women of the highest aristocracy under the patronage of the empress.

The Union was a success from the start. At present there are 41 sections numbering 10,000 members. In every garrison, the wife of the military governor is president of the local committee, while the wife of the imperial representative is vice-president. All the members are grounded in the theory and practice of the art of nursing. In the Chinese-Japanese war, 1894-95, of 1,587 voluntary nurses there were 649 Red Cross nurses and in the Boxer revolt, 1900-1901, of 401 voluntaries there were 201 of the same order. Finally in the Russo-Japanese war, the Red Cross furnished 5,466 voluntaries, of which number 2,096 were nurses. This war lasting 18 months was the cause of a heavy tribute to mortality on the part of the nurses; but despite this untoward occurrence, the lesson of courage and self-sacrifice, which the activities of the nurses made clear to the people, was not without good effect, for today appreciation runs even higher than directly after the close of the war.—
[Translated for the INTERSTATE MEDICAL JOURNAL.]

HISTORICAL NOTES.

JENNERIANA.

Birth. Edward Jenner, the author of what Matthew Baillie called the most important discovery ever made in medicine, throughout his professional career, with the exception of a brief period during which he practised in London, was a country doctor. He was born in Berkeley, a Gloucestershire village of which his father was vicar, on May 17, 1749. After receiving an ordinary classical education, young Jenner was apprenticed to Mr. Ludlow, of Sodbury, a medical practitioner of good reputation. In 1770 Jenner went to London to finish his medical education at St. George's Hospital.

Jenner and John Hunter.—During his stay in London Jenner was a pupil of John Hunter, under whose roof he lived for two years. A close friendship existed between these great men. Jenner's letters to Hunter have been lost, but those of Hunter to him were carefully preserved. They show the famous surgeon in a happy light, asking Jenner to collect hedgehogs, eels, porpoises, salmon spawn, etc.: and suggesting experiments on the temperature of animals, and various problems of natural history such as a country practitioner would likely find opportunities for solving. In 1771, when Captain Cook returned from his first voyage of discovery loaded with specimens of natural history, it was Jenner who arranged the collection, having been recommended to Sir Joseph Banks by Hunter for this purpose. In 1773 Jenner returned to his native place and began his duties as a country practitioner. Two years later Hunter communicated to him a scheme for the establishment of a great school of anatomy, human and comparative, in London, and suggested that Jenner should take part in the enterprise as an assistant. Jenner, who preferred a modest life in the country to a more ambitious existence in the metropolis, did not accept the proposal.

Personal Appearance of Jenner.—Edward Gardner, who became one of Jenner's closest friends, has left this description of the country doctor: "His height was rather under the middle size: his person was robust but active and well formed. In his dress he was peculiarly neat, and everything about him showed the man intent and serious, and well prepared to meet the duties of his calling.

"When I first saw him, it was on Frampton Green. I was somewhat his junior in years, and had heard so much of Mr. Jenner, of Berkeley, that I had no small curiosity to see him. He was dressed in a blue coat and yellow buttons, buckskins, well-polished jockey boots with handsome silver spurs, and he carried a smart whip with a silver handle. His hair, after the fashion of the times, was done up in a club, and he wore a broad-brimmed hat.

"We were introduced on that occasion, and I was delighted and astonished. I was prepared to find an accomplished man, and all the country spoke of him as a skilful surgeon and a great naturalist: but I did not expect to find him so much at home on other matters. I, who had been spending my time in cultivating my judgment by abstract study, and, smit from my boyhood with the love of song, had sought my amusement in the rosy fields of imagination, was not



Jenner vaccinating a child. (From Holländer's *Die Karikature und Satire in der Medizin.*)

less surprised than gratified to find that the ancient affinity between Apollo and Esculapius was so well maintained in his person."

Statues of Jenner.—Numerous statues have been erected in honor of Jenner, the following list comprising the principal ones:

1.—"In the year 1821 a handsome monument to Dr. Jenner stood in the great square of Guatemala, a magnificent city in Central America. * * * "There the name of Jenner was honored and revered, even during his lifetime, as a benefactor of his species, and more worthy of a niche in our esteem than many of those who have been lauded as the conquerors and destroyers of mankind."—*Glasgow Herald*, June 5, 1858.

2.—Bronze statue by Calder Marshall, R. A., now in Kensington Gardens, London.

3.—Statue by Sievier at the west end of the nave of Gloucester Cathedral.

4.—Statue at Brünn, in Moravia.

5.—Bust by H. Corbould. A lithograph of this bust by R. J. Lane forms the frontispiece to Vol. II. of Baron's *Life of Jenner*.

6.—Bust by S. Manning.

7.—Marble statue by Monteverde. Jenner vaccinating a child. Exhibited at the Paris Exhibition of 1878. Now in Boulogne. (*British Medical Journal*, May 23, 1896.) Holländer (*Die Karikature und Satire in der Medizin*, p. 293, Stuttgart, 1905) says that this statue is in Genoa. (See illustration.)

SOCIETY PROCEEDINGS.

ST. LOUIS SURGICAL SOCIETY.

Meeting of January 8, 1908.

Dr. H. Tuholske read a paper entitled "Unusual Positions of the Appendix, With Report of Cases," for which see page 270.

DISCUSSION.

Dr. Tupper mentioned a case of unusual position of the appendix in connection with strangulated hernia, under the care of Dr. Blair when the latter was associated with him. On operating, the hernial sac was found to enclose a part of the cecum and a very much inflamed and attached appendix, the caput coli being well outside the constriction. The constriction was relieved, the appendix removed and the patient made a good recovery.

He mentioned another case, not bearing on the subject of the appendix, but on unusual hernial protrusion. The patient was a woman suffering from inguinal hernia, who stated that occasionally the ovary seemed caught in the hernia, because she felt the peculiar pains following involvement of the ovary. On opening the sac he found in addition to a knuckle of the intestine, something which seemed to be an ovary, but he barely saw it as it escaped into the abdominal cavity. He closed the opening for the hernia radically, and then made a median incision to explore the right ovary. The woman had unquestionably diagnosed the condition correctly, as the ovarian ligament was of such length as readily to permit the ovary entering the hernial sac. The damaged condition of the ovary necessitated its removal. Relief of symptoms referable to the hernia and ovary followed.

Dr. Homan asked whether the negro comes under the knife for this disorder as often as the white. He thought that possibly the eating of more highly spiced food and its more delicate preparation, might have something to do with influencing the condition.

Dr. Tuholske, in closing, said he remembered the case of hernia mentioned by Dr. Tupper, and that he had diagnosed the ovary as being in the hernial sac. He stated that Dr. Dixon had had a case during last year, originally under the care of Dr. Saunders, in which a new-born babe, within a week of birth, had a strangulated hernia and in it the appendix. It was removed and the little patient recovered. This was the youngest patient he had ever heard of having been successfully operated on for this condition.

BOOK REVIEWS.

TEXT-BOOK OF DISEASES OF THE SKIN. By Arthur Van Harlingen, Ph.B., M. D. Fourth Edition. Price, \$3.00. P. Blakiston's Son & Co., Philadelphia, Pa.

One of the best works on diseases of the skin, written by an American dermatologist for the busy general practitioner and for students. The reader is not bothered more than is necessary with a description of the anatomy and physiology of the skin, nor with an extensive description of the lesional configuration, distribution, etc., of skin lesions. General etiology, pathology, diagnosis and treatment are not given space in this book under separate headings, but are mentioned sufficiently with the description of each particular disease and thereby make the book more useful for students and general practitioners.

Of the exanthemata only varicella is mentioned, for the reason that the others are described extensively in every book on general medicine. Of syphilis only the skin manifestations are described, and very little space is given to the treatment of this most important disease, which we regret. Compared with previous editions, this fourth one shows that the text has been rewritten for the greater part, so that the book is brought up to the present state of our knowledge of dermatology.

Several new illustrations are added; some space is given to a brief account of the pathologic anatomy of the various diseases, while several diseases that were not mentioned in previous editions are now described. Where we found the diseases arranged alphabetically before, they are now arranged according to the classification generally adopted by American teachers of dermatology. The changes mentioned make the book more useful for students, and for the general practitioner we know of no better American book on this subject.

TREATISE ON DISEASES OF THE SKIN: FOR THE USE OF ADVANCED STUDENTS AND PRACTITIONERS. By George W. Stelwagon, M. D., Ph.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Fifth Edition, Revised. Handsome octavo of 1150 pages, with 267 text illustrations and 34 full-page colored plates. Philadelphia and London: W. B. Saunders Co., 1907. Cloth, \$6.00 net; half morocco, \$7.50 net.

The fact that five editions of this book and two extra editions appeared in five years is certainly the best recommendation for it. As Dr. Stelwagon's book has been reviewed in this journal before, we will only mention that some obsolete material in former editions has been omitted, while valuable additions of new matter reflecting the latest investigations and literature are made. The main additions and changes are found in the diseases rendered more important by our closer touch with tropical countries.

The articles on frambesia and oriental sore have been rewritten, and those on verruga peruana and tinea imbricata changed and added to. New tropical subjects are introduced, of which we mention especially dhobie itch and uncinariar dermatitis. The eruptions of the leukemias and meralgia parasthetica are mentioned for the first time. The large number of illustrations and plates are enriched by fifteen new ones, making the book still more valuable to the practitioner. Dr. Stelwagon's works on diseases of the skin is, in our opinion, the best American book on this specialty, both for practitioners and for students.

SYPHILIS IN ITS MEDICAL, MEDICO-LEGAL AND SOCIOLOGICAL ASPECTS. By A. Ravogli, M. D., Professor of Dermatology and Syphilology in the Medical College of Ohio, Medical Department of Cincinnati University. Publishers: The Grafton Press, New York.

This is a book which we can recommend very highly not only to the medical profession, but also to lawyers, ministers, statesmen and every educated layman. We have here a very thorough book on syphilis, not only from a medical but also from a medico-legal and sociological standpoint, which makes it of interest for everybody who feels for the welfare of our communities. The enormous amount of suffering and unhappiness caused by syphilis is well illustrated and should be understood by every well-meaning citizen so that the proper measures could be taken to prevent as much as possible the great harm done by this dreadful disease. Ignorance is the main reason why the social plague is not kept in its possible limits. The book of Dr. Ravogli can be of great benefit in improving conditions if it reaches the people mentioned above.

A brief, up to date, historical sketch of the search for the causal agent of

syphilis is followed by a clear description of the pathologic process and the modes of infection, while the evolution of syphilis is treated extensively, making the book one of the best we have on this subject.

In the second part the medico-legal and sociological aspects are dealt with in a very clear way, and the chapters on syphilis and marriage, syphilis and the public health, syphilis in relation to degeneracy and the regulation of prostitution in the public prophylaxis of syphilis, should be read by every citizen.

THE PRINCIPLES AND PRACTICE OF MODERN SURGERY. By Roswell Park, A. M., M. D., LL.D. With 722 engravings and 60 full-page plates in color. Philadelphia and New York: Lea Brothers & Co., 1907.

In every department this book shows the authoritative and concise statement of the highest type of text-book, and is an improvement over the American Text-Book of Surgery, which was edited by Dr. Park. The well balanced and thorough treatment of each subject makes the book a valuable monument to the author, whose large experience in many branches of surgery is shown throughout the text. If in such a complete treatise one can say that anything is featured, we would mention that the sections devoted to treatment stand out most prominently. The methods advised are not only surgical technical methods which are carefully and minutely described, but the medical side of the treatment is as fully considered. The style of the author is concise and uninvolved and shows a careful digestion of the salient features in pathology, etiology, symptomatology and diagnosis. Students will find the frequent abstracts and summaries of subjects of great value. The arrangement of the text of the book is good. As in part prompted by this work, it may not be out of place to venture the hope that some day soon will give us a new surgery by an American, illustrated throughout by sufficient but entirely new cuts. There is a certain disappointment not unmixed with tedium at seeing time and again the same cuts and figures appearing in every "new" surgery.

COMPEND OF SURGERY FOR STUDENTS AND PHYSICIANS: MINOR SURGERY AND BANDAGING. By Orville Horwitz, B. S., M. D. Sixth Edition, Revised and Enlarged, with 195 illustrations and 104 formulæ. Philadelphia: P. Blackiston's Son & Co., 1907.

The number of editions this little book has enjoyed attest the demand for these Quiz Compend, but we venture to state that if it were not for that bugaboo—the state board examinations—they would cease to be purchased except in the districts where the "proprietary" medical school with indifferent teaching still holds sway. As to our minds this is the reason for the continuance of these depositories of ancient obsolete methods. It would hardly be in place to find fault with the poor choice of material, but it is nevertheless surprising the amount of information of one sort or another that is contained in these books. It might have been as well for the author to have revised his formulary and omitted many of the prescriptions, which we feel certain he himself never uses.

PRACTICAL TEXT-BOOK OF MIDWIFERY FOR NURSES. By Robert Jardine, M. D., Edin. M. R. C. S. Eng., etc., etc., Professor of Midwifery in St. Mungo's College, Glasgow, etc. Third Edition, with 49 illustrations. Publishers: Henry Kimpton, London. (W. T. Keener & Co., Chicago.) Price \$1.50 net.

This little volume presents the subject in a very satisfactory manner. All that is important for the nurse is described with much detail, purely scientific questions being mentioned only briefly so as to preserve the continuity of thought. It would seem that this short presentation of obstetrics with its extensive accentuation of all practical points would also prove of benefit to the medical student.

TRAITE DE GYNECOLOGIE CLINIQUE ET OPERATOIRE. Par S. Pozzi, Professeur de Gynecologie a la Faculte de Medicine de Paris, etc., avec la collaboration de F. Jayle. Quatrieme Edition. Tome II. Paris: Masson et Cie., Editeurs, 1907. Prix: 15 frs.

Pozzi's gynecology is the recognized standard work of the civilized world. We feel justified in assuming that every reader of this journal is well acquainted with this excellent work, and, therefore, will limit ourselves to the announcement that the second volume has appeared, thus completing the fourth edition.

INTERNATIONALES CENTRALBLATT FUR DIE GESAMTE TUBERKULOSE-FORSCHUNG. II. Jahrgang. Nr. 1. Wuerzburg. A. Stuber's Verlag (Curt Kabitzsch). 1907.

With the second volume, the title of this journal has been changed so that the last word reads *Forschung* instead of *Literatur*. The scope of the journal

has undergone a corresponding change. Instead of attempting the impossible task of abstracting the enormous volume of literature that is constantly appearing on tuberculosis. It will confine itself to a discussion of articles that actually represent research. It is to be hoped that this limitation of its scope will enable it to do as complete justice to English and American work as it has always done to that appearing in France and Germany.

STUDIES IN THE PSYCHOLOGY OF SEX—EROTIC SYMBOLISM, THE MECHANISM OF DETUMESCENCE, THE PSYCHIC STATE OF PREGNANCY. By Havelock Ellis. 6¾x8¾ inches. Pages x-285. Extra cloth, \$2.00, net. Sold only by subscription to Physicians, Lawyers and Scientists. F. A. Davis Company, publishers, 1914-16 Cherry Street, Philadelphia.

In this volume, the fifth of the series, the terminal phenomena of the sexual process are discussed; erotic symbolism, the mechanism of detumescence and the psychic state during pregnancy. In his well-known clear style Havelock Ellis presents a thoroughly scientific discussion of these intricate problems. A sixth volume will conclude this series with a consideration of the relation of the psychology of sex to social hygiene.

L'HYGIENE DES MALADIES DE LA FEMME. Par A. Siredey, Medecin de l'hôpital Saint-Antoine, Paris. Masson et Cie, Editeurs, 1907. Price, Francs 4.00.

This is one volume of a most interesting series called *La Bibliothèque d'Hygiène Thérapeutique*.

If in any branch of medicine there certainly in gynecology prophylaxis plays a very important role in therapy. Practically every known disease of the female genital organs is carefully considered by the writer, and it is clearly shown how it could be prevented, in most instances, by appropriate hygienic measures. The little volume abounds in good practical advice and deserves special commendation because, in our knowledge, no monograph is extant in the English language devoted to this particular subject.

CHRISTIANITY AND SEX PROBLEMS. By Hugh Northcote, M. A. Extra cloth. Price, \$2.00, net. F. A. Davis Co., Philadelphia, Publishers.

In this work an endeavor is made to adjust the relations between science and Christian thought in the region of sexual ethics. The author gives due credit to the work of such men as Krafft-Ebing and Havelock Ellis, but believes that the scientific investigator as a whole is too inclined to sneer at traditional and conventional ideas of sexual morality, and to speak impatiently of asceticism, ecclesiastic influence, and the like. On the other hand, the writer of this interesting volume is ready to acknowledge that the orthodox moralist refuses to face and properly consider actual facts. We need a new ethic of the sexes, and this, in the writer's opinion, will be found in a careful consideration of the result of modern scientific research on the basis of traditional ideas current in Christian society. "Many considerations independent of sex questions strengthen the belief that in the Christian religion is found the key to the problems of life. Consequently, a vital, progressive Christianity cannot long be out of harmony with any part of science."

SYLLABUS OF LECTURES ON HUMAN EMBRYOLOGY: AN INTRODUCTION TO THE STUDY OF OBSTETRICS AND GYNAECOLOGY FOR MEDICAL STUDENTS AND PRACTITIONERS; WITH A GLOSSARY OF EMBRYOLOGICAL TERMS. By Walter Porter Manton, M. D., Professor of Clinical Gynaecology and Professor Adjunct of Obstetrics in the Detroit College of Medicine. Third Edition. Revised and Enlarged. Illustrated with a colored frontispiece and numerous outline drawings. 12mo, 136 pages; interleaved throughout for adding notes. Bound in extra cloth. Price, \$1.25, net. F. A. Davis Company, 1914-16 Cherry Street, Philadelphia, Pa.

While this work is specially designed for, and will be found particularly useful to students in their first and second years at college and is likewise a desirable manual for review and reference for the general practitioner, it is not intended to take the place of the exhaustive text-books on Embryology, but is primarily for use in the class room supplementary to the lecture and for laboratory guidance. It can also be used for self-instruction and in laboratory work in connection with the usual text-books.

LATERAL CURVATURE OF THE SPINE AND ROUND SHOULDERS. By Robert W. Lovett, M. D., Boston. Associate Surgeon to the Children's Hospital, Boston; Instructor in Orthopedic Surgery, Harvard University. With 154 illustrations. P. Blakiston's Son & Company, Philadelphia, Pa.

The work done by Lovett on lateral curvature has attracted world-wide attention. The several papers published by him in the last few years on the

development of scoliosis have given to the literature on this subject some most interesting original views. His present work is, perhaps, the best work on lateral curvature that has appeared in the English language. It possesses a certain advantage over the extensive treatises written in German in that it is concise and describes quite definitely what has been the author's experience in the treatment of these cases.

A PRACTICAL TREATISE ON FRACTURES AND DISLOCATIONS. By Lewis A. Stimson, B. A., M. D., LL.D. Professor of Surgery, Cornell University Medical School, New York; Surgeon in New York and Hudson Street Hospital. Fifth Edition, revised and enlarged. With 352 illustrations and 52 plates in monotint. Lea Bros. & Co., Philadelphia, Pa., 1907.

This work first appeared in 1889 as a new book. Since then it has passed through four editions and we now have the fifth. There is a noticeable increase in this book over the first edition volume. So much has been accumulated by the x-ray in recent and old cases, especially in fractures involving joints and the small bones, that the author has made considerable increase in the sections covering fractures in the carpal and scaphoid bones, the upper end of the radius, the tarsal bones, and dislocations of the semi-lunar; also the reports of rarer cases of injury have increased so greatly that it has become impossible to mention them all. The book differs little from its immediate predecessor, but like to it, it is a most valuable text book.

INTERNATIONAL CLINICS. Seventeenth Series, Vol. 3. Edited by W. T. Longcope. J. B. Lippincott Co., Publishers, Philadelphia, Pa.

This volume is similar to the long list that has gone before, in that it contains some very interesting articles on almost all the subjects comprising modern medicine.

ROENTGEN RAYS AND ELECTRO-THERAPEUTICS. With a chapter on Radium and Photo-Therapy. By Mihran Krikor Kassabian, M. D. Published by J. B. Lippincott Co., Philadelphia, Pa.

This book presents clearly and concisely the more important facts pertaining to Electro-Therapeutics and the Roentgen Rays. It is similar in size and scope to the book published by Williams, but contains a more modern view of the various applications of electricity and x-ray light to medicine and surgery.

THE PRODUCTION AND HANDLING OF CLEAN MILK. By Kenelm Winslow, M. D., M. D. V., B. A. S. (Harv.). With many illustrations, including 1 colored and 15 full-page plates. New York: William R. Jenkins Co. 207 pages. Price \$2.50, postpaid.

The author has had an extended experience in the production and handling of milk, and in this work has enjoyed the advantage resulting from a knowledge of both veterinary and human medicine. The volume will be of value to health officers, milk inspectors and physicians in private practice who are interested in matters pertaining to dairying and hygiene.

OUR CHILDREN. HINTS FROM PRACTICAL EXPERIENCE FOR PARENTS AND TEACHERS. By Paul Carus. 207 pages. \$1.00. net. The Open Court Publishing Co., Chicago, Publishers.

The author has written a book which physicians can place in the hands of parents with much satisfaction. The volume deals in a practical manner with many pedagogic problems concerning which the family physician is often consulted.

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EDITORIAL.

SANITATION A CHECK TO THE EVOLUTION OF IMMUNITY.

It is now apparently accepted as a fact that when an infectious disease has afflicted a race very many centuries or milleniums, it produces an immunity or tolerance. The most susceptible die in each generation and the least susceptible survive—a process which in time renders all resistant by the ordinary laws of survival. In certain cases another process may take place, and the more virulent strains of bacteria perish as they kill too quickly to permit the transmission to a new host. In the meantime there is a period when the disease is fatal only to children, for all adults who have survived the disease in childhood are immune—the condition as to smallpox in those tropical countries where it is endemic and vaccination is unknown. Adults have no personal dread of the disease for they see that it kills only the babies. Later, the disease appears in frequent epidemics in which nearly all the victims are children, and this was the state of affairs in England before Jenner stopped the evolution of immunity which was so surely being produced. The susceptible are now all preserved, and if vaccination is neglected for a long time the mortality of the first epidemic is much higher than in pre-Jennerian days for the disease finds more non-immune adults.

It now appears that identical processes have been going on as to yellow fever in Cuba. Prior to the Spanish war the disease was endemic and every one was liable to get it in childhood, to survive or perish as his resistance was great or small. Adults were nearly all immune, if not all of them, and they actually resented the sanitary means taken to end a disease which was only fatal to children, and in them it was frequently unrecognized. The only adults who perished were non-immune Europeans and Americans who resided in the large seaboard towns.

The discovery of the mosquito transmission of the infection has had almost identical results that Jenner's discovery produced in smallpox. The sanitary warfare in Havana and the larger towns practically wiped out the infection as that is where the non-immunes were keeping it

going. The interior was immune as to the adults, and as there was now no infection being carried to the children, quite a large non-immune population grew up in the succeeding years, both among the native children and adult immigrants, and these are now scattered all over the Island.

The infection has been repeatedly introduced from Central and South America, and though it was at first easily subdued at the seaboard, some mild unrecognized cases have slipped through carrying the organisms into the interior where an increasingly large non-immune population is keeping alive—a condition of affairs far different than in the old Spanish days. The facts have only recently been realized by the sanitary authorities who have been chagrined at their failure to do what was done so successfully in 1901 when only the seaboard towns harbored the infection. (Report of Provisional Administration, by Gov. Magoon).

This scientific medical matter is bound to have far-reaching political effects. The longer the present sanitary war is kept up and the more successful it is, the larger will be the non-immune population, so that when infection does enter, the mortality rate will be as high as in the lower Mississippi valley where there are but few immunes. Consequently it will be necessary to wage a warfare of constantly increasing expense and effectiveness, if the disease is to be kept in check and not be a menace to America. The Cuban treasury cannot stand the expense and the question now confronts this nation as to whether in its own interests it will not be compelled to keep permanent control of the sanitation of Cuba. There are rumors that foreign governments are hinting that we should continue control to protect European investments and it is quite likely that they will also hint that we should also keep yellow fever out. In other words the discovery that a mosquito transmitted yellow fever, may determine the permanent union of the two countries.

ON THE ADVANTAGES OF A JUST CRITICISM OF BAD BOOKS.

To dismiss with scant notice a book because it has all the insignia of a flaunting badness is a remissness, on the part of a critic of literary and medical works, that merits condemnation from the discriminating among us, who have at heart the advantages of the educative factor as it pertains to criticism. If it is true, as Mr. John Churton Collins, the English critic, says "that every bad book stands in the way of a good one," it is easy of comprehension that a perfunctory criticism of the former is inadequate as a means to the end which all good criticism should have for its goal—a thorough exposition of a subject so that even the least critical among us may benefit by a full knowledge of an author's defects.

By bringing before those who read not wisely but too well, in other words, indiscriminately, the full measure of an author's sins of commission, a bad book would be made to fall much sooner than can possibly be done by a curt notice which only too often betrays a prejudicial spirit and an impatience of the mediocre—qualities which should be foreign to the critical faculties of any arbiter of what constitutes the educated judgment of literatures.

Of all literatures which have suffered most at the hands of critics whose equipment for their individual work leaves much to be desired, medical literature can lay claim to the worst offenders. Just why a limited amount of scholarship, a fair quota of the critical faculty, the mental equipoise of the well-read man, and that urbanity without which no individual can make for much as a critic, are not the weapons for good in the armamentarium of the writers on our medical press, passes comprehension. That some of these desirable qualities are part of the varied mentality of the majority of physicians as evidenced in the sick-room, goes without saying, and though it be true that their activity in the circumstances just indicated is of so exalted a nature that comment is unnecessary, directly one or another doctor, though possessed of acumen, perspicacity and judgment, puts his thoughts on paper anent the worth and value of a medical publication, the performance is, with rare exceptions, the sort that a tyro, hampered by prejudices and selfishness and unarmed with arguments, would be guilty of. Of course we cannot expect of writers on our press the profundity of a George Brandes, the vivacity of a G. K. Chesterton, or the literary audacity of a Churton Collins, but are we asking too much when we demand of our literary guides that amount of verbal luxury which would give the ply to criticism so that those members of the profession, whose readings outside the narrow one of a few text-books is now supplied by popular books of a bastard scientific origin, would be sufficiently benefited to differentiate between a good and a bad book?

Voltaire in an account of Bayle says: "*Des Maizeaux a écrit sa vie en un gros volume; elle ne devait pas contenir six pages*" (Des Maizeaux has written his life in a large volume; it ought not to occupy six pages) and though this criticism is without rival for succinctness and pithiness, and stands apart from all criticism because of its impeccable perfection as regards a directness which is due to what one might call, one swashing blow, it neglects to enlighten us as to why we should cold-shoulder the production. And therein it fails in its critical mission, for though upon reading it we are moved to mirth because of "the sharp, well-mannered way of laughing a folly out of countenance," the worthlessness of the book, which should have lent itself to columns of harsh

criticism so as to warn others against reading it, seems to afford but an incentive to the mordant wit of a man of extraordinary talents. We make no doubt that this sort of criticism is well in its way and deserving of praise; nevertheless we cannot refrain from decrying similar attempts at brevity in our medical journals—we need not mention the wit for that is never a troublesome attribute of the critics we have under consideration,—for the reason that they but proclaim the extraordinary vacuity of the mentally stultified.

It is a commonplace of observation that bad books—we mean the unscientific and the poorly written ones—like bad persons, should not arrest our attention for long. This is an intellectual caprice that has an especial appeal for the inadvertent. Antolycus to be made known, either to the literary or medical public, must not be slighted, for the judgment of thousands is so low that without warning of the substantial sort, minute and argumentative, his deeds may shine alongside those of the most honorable man. Macaulay did not hesitate to devote some of his most brilliant pages to a poetaster by the name of Montgomery; and the world knew at once, from the fullness of the scathing criticism, the true status of this false aspirant after literary honors.

In the light of the good that may be accomplished by the methods pursued by the best literary critics of to-day, it remains to add, that so soon as the critics of medical books will recognize the import of their office, the evil that negligence of their duties as literary advisers entails and the harm done good books by scant attention to the bad ones, we shall find the same appreciation of classical medical works among doctors which now obtains among the educated in other walks of life.

DUST AS A FACTOR IN OCCUPATION MORTALITY.

It not infrequently happens that statisticians are unable to draw safe conclusions from their own figures. The reason for this apparent paradox was pointed out long ago by Herbert Spencer, who showed that scientists are divided into two distinct classes,—those who gather facts, and those who co-ordinate facts from different observers to formulate generalization. The former are like microscopists who have a distinct view of the finest details of a little sphere, while the latter have the telescopic view of many spheres but no detailed knowledge of any. The history of the sciences is one long repetition of great laws discovered by men who had taken no part in the collection of the statistics of the facts discovered by the delvers. Medical science in particular has had painful experience on one hand of the sad generalizations of specialists unable to see the importance of other facts than their own, and on the other hand the crude ideas of many a general practitioner in relation to the

importance of specialties. The chronic warfare between the two, though quite natural, is unseemly and avoidable.

Statisticians are middle men serving both classes of specialists and generalizers, and before acceptance, any opinions expressed must be subjected to most careful scrutiny by both. These facts are beautifully illustrated by an amazingly misleading article on "Dust as a Factor in Occupation Mortality," by Mr. Frederick L. Hoffman, the famous statistician of the Prudential Insurance Company (*The Medical Examiner*, Dec., 1907) who draws conclusions unwarranted by his figures and in some respects the direct opposite. There is no doubt of course that dust causes diseases as well as carries infection, but that its importance has been unduly exaggerated and other factors ignored is shown by the fact previously reported by Hoffman that while stone-cutters have a mortality of 43.1 per cent., the same workmen underground—miners—have a mortality of only 6.4 per cent. His article is based upon the percentage of deaths from tuberculosis among certain workmen exposed to dust as compared to the percentage among all trades which is called the "expected."

For instance, he mentions the alleged fact that one-third of New York's street cleaners have tuberculosis, yet his figures show that only 19.3 per cent. of their deaths are due to it, as compared with 22.2 per cent. expected. To be sure there is an excess of deaths at certain ages, but the deficiency is greater at certain others, so that on the whole they show less mortality. In the same way the deaths among teamsters is 25.9 per cent., the slight excess over the average being fully explained by the fact that poor health or failure in other callings often forces men into that occupation, yet even here his percentages do not correspond with his numbers, for he reports 999 deaths as compared with 1049.3 expected, as though teamsters were less susceptible. The same may be said of motormen among whom 99 died as compared with 99.75 expected, yet he reports a percentage of 30.7 as against 22.2 expected. Among conductors also there were fewer deaths than expected, though letter-carriers show a slightly excessive mortality probably due to the fact that they do not spend all their time in the open air, but in dreadfully ventilated postoffices. Bookkeepers of course show a marked increase over the average, but to ascribe that to dust which is not marked in offices, and not to the confinement in hot ill-ventilated rooms is absurd. Janitors who are not confined to bad air all the time show a much less mortality than the average, and even moulders have very slightly higher rates in spite of the dust and indoor labor, while cement workers have much less mortality. On the other hand plasterers and paper hangers who spend most of their time indoors have an unduly high rate.

Hoffman's paper should have been used to prove the advantage of out

door life, and show that dust though an injury to health is greatly overestimated. Perhaps "knife-grinder's rot" will prove to be in part at least a confinement disease. It is doubtful if statistics were ever put to greater misuse, for they minimize the necessity for perfect ventilation for indoor workers and the great advantage of an outdoor life in spite of its dustiness here and there. Indeed the black lungs of persons who have lived in a smoky atmosphere show that these organs can stand an enormous amount of such abuse if the general health is maintained. We must have clean dustless streets and can abundantly prove their necessity, but exaggeration of a danger begets a contempt which defeats the purpose in view.

THE CAUSES OF NEURASTHENIA.

Overwork and tissue starvation as causes of neurasthenia have been discussed for many years, but their relative importance is of recent knowledge. Dr. Robert N. Willson, of Philadelphia, deserves the highest commendation for his bravery in combating the prevalent professional opinion which gives the greatest weight to the factor of exhaustion from "overloading." His article (*The Amer. Jour. of the Med. Sciences*, Feby., 1908) really marks an epoch, for he calls attention to the fact that the basis of nerve weakness is starvation of all the tissues as well as the nerve cells. The symptoms are the cry of weakness and a variety of hunger. There are many things which interfere with nutrition and the diagnostician must find out which particular ones exist in each case. The removal of the cause begins the cure, the details of the treatment depending upon the conditions found in each case. Paradoxical as it may seem, tissue starvation may exist even when the patient is over-fed, and a reduction of diet be imperative to induce better digestion. The very fact that neurasthenia is not more frequent among the hard workers than the idle, should have proved to us long ago, that work of itself is not the main cause, indeed the idle seem to furnish more cases than the busy. There is often if not always, an inherited "weakness"—whatever that may be—which enables minor causes to work havoc, causes which are harmless to the normal, but these are always of such nature that they interfere with tissue repair whether there is work or idleness.

This is all a sad blow to the rest treatment which by lessening expenditures is more or less curative even when the causes are not removed. It fully accounts for the prompt relapses when the causes of under-nutrition continue. It does seem that though we are in complete ignorance of the underlying pathological changes which have occurred in the protoplasm, we are on the road to a better idea of their causes. Cure and prevention will then follow as a matter of course. It is certainly

a big step to know that if nutrition is proper, enormous loads are harmless, but if it is defective the least exertion may exhaust. It is well known that overwork is purely a relative term anyhow, and that hard work is usually conducive to health. It would be a strange addition to the numerous medical revolutions of the last two decades, if graduated work would supersede the classical rest treatment, though nothing could be more logical, even if like all new things, it would be savagely condemned by the authorities at first. It might not be wise to "horsewhip every neurasthenic woman into the open air," but as a figure of speech it might be acceptable to call attention to the necessity for firm compulsion of graduated exertion. The proof of the pudding is the eating, and in this case good results have already been obtained. Willson's paper is important to the profession at large, as well as neurologists, for it touches upon a point of wide application. Under-nutrition is looming up large as a cause of many conditions and indeed neurasthenic symptoms seem to complicate every prolonged illness. The only point he seems to have missed is the fact that when there is tissue starvation, it is generally if not always due to deficiency of nitrogen. Every little while some such new evidence is brought to light showing how dangerous is Chittenden's low-nitrogen diet.

ARE CONSUMPTIVE SANATORIA WORTH WHILE?

Since the start of the crusade against tuberculosis, we who are more or less in close proximity to the fight, have had our ears deadened from time to time with the formidable booming of statistical guns. We are all too familiar with the ominous noise that death-rates make when spoken by some of the ardent warriors who are struggling with the white plague, nevertheless each new speaker or writer reaches us with a new appeal in his words. But we feel our inconsequence and ineffectuality quite severely, especially when we realize that some of our own number, members of the medical profession, have had the hardihood to write or speak against the sanatorium treatment of tuberculosis.

Against these, Dr. David Lawson, M. A., F. R. S. E., has most valiantly taken up the gauntlet. In the *Glasgow Medical Journal* for March of this year, he opens his argument with the following: "It is a startling fact that over five millions of our fellow-creatures in the world, and of these over one million in Europe alone, die every year from pulmonary consumption. Richel, comparing those great forces which are destructive of human life, has shown that the popular conception of war leading the van in this respect is an altogether fallacious one. Compared with the ravages caused by consumption the destructive work done by the sword is relatively unimportant. For, taking the great wars of the

nineteenth century as an example, he finds, that while by men's engines of destruction fourteen million combatants were slain, the death-roll from pulmonary consumption during the same time and in the same countries amounted to no less than thirty million persons. You are familiar with the deplorable prevalence of this disease in our own country—a disease which every year cuts off whilst still in possession of their full working power more than one-half the number of those wage-earners who die from all causes put together. And it is not alone the mere number of lives which it accounts for which renders this disease of pre-eminent importance to us, altogether even upon that account far out-distancing as it does all other diseases in the havoc which it works on human life—it easily holds premier position—but exerting a selective affinity it proceeds with conspicuous malevolence to choose as its victims those whom the nation can least easily spare. It is at that age when sentiments ring true, in the early years of maturity, in the full bloom of manhood and womanhood, when the care of the next generation by the parents who have begotten it is most needed, that consumption enters the home and strikes its fatal blow. Nor does the disease confine its attacks to the ranks of the ignorant, the poor and the illiterate. On the contrary, it would almost appear that the possession of exceptional attainments only serve to attract its malignant attention the more. From the ornaments of our own profession, and from the ranks of literature, music and art, we know that consumption has exacted a heavy toll. But for consumption, Robert Louis Stevenson might still be delighting us with his entrancing stories of South Sea mysteries; John Keats might have given us another 'Endymion;' Artemus Ward might even now be engaging our fancy with fresh flights of inimitable humor; Schiller might have given us another 'Song of the Bells;' and Chopin might have dreamed another 'First Polonaise.' Laennec, Spinoza, Purcell and Rachell all died of consumption. And these are but a moiety out of the world's nobility, whose precious lives have been cut off in their prime by the great white plague.

"In the light of these facts the subject which we have met to consider is one which concerns directly or indirectly every loyal citizen in this land, and as a member of a profession whose ideals embrace not merely the cure, but the eradication and prevention of disease, it holds for us a very special interest.

"Within the last ten years, during which the sanatorial movement has been advancing in this country, many conflicting opinions have been expressed from time to time alike in medical and in lay journals regarding the practical utility of sanatoria in fighting this great scourge. The time now appears to be ripe for an open discussion of the subject. It is,

therefore, with the greatest possible pleasure, and with a deep sense of the high honor you have conferred on me, that in response to your kind invitation I appear before you this evening to ask your courteous consideration of a statement of some of the evidence upon which the value of the sanatorial claim rests. Not alone in the realm of pure medicine is to be found all, or even the majority, of facts which go to constitute the apology for the consumptive sanatorium. If, therefore, in addition to the proofs afforded by purely clinical evidence one ventures to cull from historical, sociological, commercial and industrial literature, evidence on behalf of their value, I trust you will bear with me. For it appears to me that only as we approach the subject on such broad lines as these can we expect to obtain in proper proportion a true conception of the subject-matter in hand.

"Thus far we have been concerned in bringing to your recollection the deplorable prevalence of tuberculous disease throughout the world, and in endeavoring to show the reasonableness of its claim in the common interest of humanity on our serious attention. In view of the facts which have been cited, and they are but as a drop in the vast ocean of facts which are available, it is unthinkable that any rational man can be disposed to question the correctness of the thesis that 'the disease is one which ought to be energetically dealt with on systematic and comprehensive lines.' If that is granted, then the importance of that part of the subject with which we are concerned this evening, 'Are consumptive sanatoria worth while?' 'Do they justify their inclusion as weapons in the armamentarium at our disposal for fighting this disease?' will be readily recognized.

"It has been seriously urged in some quarters that a careful consideration of the record of work done by consumptive sanatoria in this country up to this point indicates that a negative answer should be given to this question, and that it has been shown that 'sanatoria are not worth while.' Whilst one cannot admit that this conclusion is warranted by the evidence from which it is drawn, one takes exception to a course of action which restricts the field of observation to so narrow limits, and does not hesitate to form so sweeping a conclusion upon so limited a generalisation as this provides. Rather does one prefer, passing beyond the narrow confines of these insular surroundings, to draw one's evidence from the operation of those great forces which are at work in the larger world beyond, and to avail oneself of the lessons of experience gained in other countries and in other lands. Let me remind you of some of the more familiar arguments by which their detractors have sought to show that sanatoria are unworthy of support."

Dr. Lawson then recites the objections to Tuberculosis Sanatoria, placing them under the following heads:

The Historical Objection, i. e. that the treatment of tuberculosis by proper sanatoria is a fad, and that the method is untried, its value remaining to be demonstrated. The answer to this is that George Bodington, a country physician in Warwickshire, established a consumptive sanatorium in 1840, that Hermann Brehmer started a similar institution in Germany in 1859 and that these two institutions being parents of the idea in England and Germany, soon proved their value, and were followed by successful institutions in all civilized lands that have long since passed the stage of doubt and trial.

The Clinical Objection, i. e. that the results obtained do not justify the existence of sanatoria. In reply to this much statistical knowledge is cited, to the effect that 73 per cent of cases treated at sanatoria were capable of return to working capacity.

The Commercial Objection, i. e. urging that their institutions do not "pay."

After a crushing array of statistics, Dr. Lawson concluded with this paragraph:- "No one can ever justly accuse the directors of any insurance company acting in their corporate capacity of being liable to be swayed by emotional interests or by a tender regard for the happiness or welfare of the human race. There is one principle, and one principle alone, which guides them in their business policy, and that principle is how to make most money for their shareholders. When we find such directors deliberately spending millions of capital on consumptive sanatoria, and annually spending hundreds of thousands of pounds in supporting their tubercular clients in such sanatoria, then we are, I take it, justified in concluding that in their opinion at all events it pays better to cure phthisis than to subsidise it, and that in the sanatoria they have the most powerful instrument at their command for enabling them to achieve the end they have in view."

ORIGINAL ARTICLES.

HERNIA—A GENERAL STUDY—ESPECIALLY ITS MEDICO-LEGAL ELEMENTS.

By W. B. OUTTEN, M. D., of St. Louis.

All history indicates that it is almost impossible to make men use at all times the best and most efficient method in progress, particularly if the measure and means of their information and knowledge lack the necessary power and breadth. While it is generally true that mankind never loses any good thing, physical, intellectual or moral, until it finds a better, yet (in this instance) it has been indeed remarkably slow to verify and illustrate it in the history of hernia. Still, the historical description of ancient methods as devised and practiced in the treatment of hernia illustrates that however slow the progress of mankind may be, or how imperceptible the gain in a single generation, the advancement is evident enough in the long run. The analytical psychologist will find when he studies the past history of hernia, many strange and seemingly erratic periods of mental endeavor, where instead of larger and larger comprehension of truth being manifest, almost the reverse occurs.

Again, he (the analytical psychologist) will find a difficult problem when he strives to determine the psychic causes leading to what seems to be at times a complete abrogation of all demonstrable facts, and the eager acceptance of empirical, vagaried and mystical theory, nor can he determine absolutely why the most intelligent surgeons in one period ignored the teachings of a past which indicated the most effective and common place procedure, to accept, seemingly, a procedure bordering upon the idiotic and inane.

Celsus, nineteen centuries ago, formulated precepts in the treatment of hernia which cannot be much improved upon even now. He intelligently indicated the age most favorable to success and lucidly described various modifications of treatment in different types of this trouble. He gave explicit directions as to the seat of incision, how to resect the sac, how to cut away the omentum, and char the stub of the cut surfaces with hot irons. He gave positive and forcible directions how to guard against injury to the elements of the cord or testis. History avers that this famous surgeon operated many times with successful results. Compare this treatment of Celsus with treatment used in the beginning of the nineteenth century when the radical cure of reducible hernia by operative methods had been definitely abandoned. At this time medicated trusses possessing marvelous healing powers were used. John Dubois gave to the world his plant which had wonderful and unique properties, and which came from a cyprus tree. Verdier (1818) radically

cured hernia with pills of muriate of mercury. In these days there were even advocates of the ginseng keon-ki Chinese radical cure for hernia; the patient was restricted to a diet of rice, bread, water, along with sheep's kidney, while the ginseng keon-ki was applied to the hernia, and it is said that patients got well in six days. Guy De Chauliac of the fourteenth century not only gave precise methods for the radical cure of hernia, but indicated appropriate cases, spoke intelligently of their dangers and the results obtained. Influenced by his surroundings he, too, possessed a secret preparation which he alone knew and which he alone could prepare, and which was administered by him with a great deal of mummary and peculiarity. He placed his patient upon his back, put a metallic plate over the hernia, then this was firmly compressed by bandage. He then dosed his patient with his favorite powders in order that the violent attractive power they possessed for the metal would draw the hernia upward into the abdominal cavity.*

The stories of surgeons who used caustics, chemical compounds and thermal agents were indeed numerous and include such names as Lanfranc, Theodorus, Crevez, Pierre, Master Methius, a Swiss operator who liberated the cord, divided the sac and used a gold suture to seal the internal ring. In 1855 hernia operations again came in vogue, and many procedures were devised by Valpeau, Leroy D'Etoilles, Bonnet, Malgaigne, Mayor, Guerin and Thierry. It should be mentioned in passing that these surgeons confined themselves to the inguinal variety mainly. At this time in England and Germany operations for reducible inguinal hernia were not popular. In 1865 Wood, of England, commenced treatment of hernia by invagination. Heaton, of Boston, a quack doctor, attained a great notoriety by curing hernia with subcutaneous injection of quercus alba. Twenty-five years later Schede, Nussbaum, Czerny, Reisel, Socin, having anesthetics and antiseptics at their command, began the treatment of many cases of reducible hernia by operative procedure. At this period in France, Championniere was the first to treat reducible hernia by operation to any great extent. Spencer Wells, Redfern Davies, of England, Wutzer of Bohn, Rothmund of Munich, treated many cases by invagination of scrotum. The first surgeon who recommended and practiced the preservation of the sac was Heistel. According to Valpeau, Garangeot and Steffens dissected up the sac and then folded it into a pad and pushed it into the canal as a plug in all operations for strangulated inguinal hernia. This same procedure has been followed out by Professor McEwen of Glasgow, the only difference between McEwen's procedure and Garangeot was in epiploceles, instead of the sac he employed the omentum to block the passage.

It would indeed be marvellous and almost impossible to find more erratic and inane treatment in the history of surgical treatment of any

*Other topical applications, as the white of an egg for a vehicle, crushed nutgalls, antimony, yellow amber, etc. On a certain species the following mixture was supposed to possess great value: Turpentine, litharge, the feces of eagle freshly toasted, human blood and the hair of a ram, all blended together in rain water and vinegar.

condition equal to that detailed concerning the history of hernia. It certainly requires unusual thought to conceive how it was possible for surgery to be placed entirely in the hands of empirics, what process of reason could make intelligent men ignore every element of past history and accept a position as regards to surgery which could not be defended by any element of reason or common sense. Brunus speaking of this period says "that the greater part of those who practiced surgery were rustics, gabbing fools and mouthing imbeciles, that evil, vile, depraved, presumptuous and fearless women were strenuous devotees of the hernial art, while such surgeons as Lanfranc never opened the abdomen for ascites, would not operate for hernia nor cut for stone. These were the days when castration became so frequent as to demand imperial edicts against it. Balesere de Taranta castrated for leprosy and Peter of Borsia castrated for simple hydrocele. What was the condition of thought amongst the medical fraternity which advised Louis XIV. to purchase at a high price from Prior Cambrieres a secret remedy. This royal remedy had to be kept secret until the death of the Prior and which turned out to be the nitrate of potash dissolved in spirits of wine, and which was taken for twenty-four days while an astringent plaster was applied over the hernia.

George I. of England seems to have had similar thoughts to Louis XIV. Finding so many men of his army with hernia he gave to Little John 5000 pounds and a pension of 500 pounds for his method for the radical cure of hernia. Little John's method was one which any farrier might be proud of, for he scarified over the sac, applied vitriol and pressure. He operated unsuccessfully on one patient three times and finally finished in the most brilliant and agonizing manner by creating a slough of the scrotum and necrosis of the testis. Tramp operators for hernia castrated so generally in the middle of the eighteenth century in Holland, that the authorities ordered any one publicly lashed who operated without special permission.

In France, one Robert de Housse was sentenced to three years servitude in the galleys for ligating the spermatic cord in ten cases, and the result being a mortification of the testis.

Again, Mary Ann Presse of Rheims was publicly castigated and imprisoned for seven years for castrating four herniated infants, whose death followed in each case.

We have thus far given an epitome, and somewhat desultory history of hernia, but space will not permit a more extended and scientific account. What has been said will confirm our contention that the historical description of the ancient method devised and used in the treatment of hernia, were undoubtedly influenced by existing compelling suggestion. Strange lapses of thought and non-consideration of past results of treatment and the uninterpretable reason why surgeons sensible in all other things pertaining to surgery, would, in hernia, ignore an effective, common sense method, to adopt what experience has shown was akin to the inane and impractical.

How natural it is for us to wonder that a man so wonderfully ob-

servant, effective and practical as Percival Pott, should get into such a prejudiced mental state as to think that every one who undertook a hernial operation, unless life was threatened, ought to be hung. Why Sir Ashley Cooper in his lengthy career operated on nothing but strangulated hernia, and generally disproved of all other operations. Why such men as Lawrence Bichat, Scarpa, Beaumont, Schumacher, and others, only operated in certain rare cases, and the wonder increases when we see how effectively Boyer could by his writings so influence the surgical world as to relegate the scalpel and needle to non-use and to exalt the *modus operandi* of truss action.

Leaving the wonderfully varied and interesting history of hernia to others to delve in, this brings up to the existing status of modern operative methods. That this may be placed in an effective light we will quote from Manley,¹ who says: "In order that a reasonable estimate may be made of the precise or approximate value of the numerous modern operations which have been recently alternately altered, severely criticised or condemned, and with a view of according to each its just merit and demonstrating their defects and shortcomings, a brief notice of a few of the more common and popular will be described here. For the purpose of reducing their description to a simple analysis, they may all be divided into:

1st. Those in which the sac is ligated at the external ring and permitted to remain in situ.—Reisel.

2d. Those in which the sac is freely and completely dissected, the canal in inguinal hernia divided from the external to the internal ring, the sac ligated and cut away, the parts again closed in, layer by layer.—Championniere.

3d. Those in which essentially the same steps as in the preceding are carried out but the divided inguinal canal is kept open and the healing is by granulation.—McBurney.

4th. A complete detachment of the sac from its adhesions and its utilization as a plug to serve as a barrier against relapse.—McEwen.

5th. The isolation and section of the sac and its excision at the internal ring; splitting the internal ring and lifting the spermatic cord entirely out of the inguinal canal; then wholly obliterating the canal by tendinous approximation.—Bassini.

The writer trusts that he will be excused from quoting rather extensively concerning the merits of the Bassini method for the radical cure of inguinal hernia. This excerpt is taken from a paper under the title of "Report of Two Thousand Operations for the Radical Cure of Hernia—Performed at the Hospital for Ruptured and Crippled, from 1890 to 1907," by Wm. T. Bull, M. D., and William B. Coley, M. D., New York City.

"The year 1890, the beginning of this series of cases, marks an important milestone in the history of the radical cure of hernia. This was the year that Bassini's epoch-making paper describing his methods for the radical cure of inguinal hernia was published in the *Archives f. Klin. Chir.*, giving additional report of the results in 261 cases. Halsted's

method, in many points similar to Bassini's, had been briefly described in the first number of the *Bulletin of the Johns Hopkins Hospital*, 1889, although Bassini's has been published in an earlier paper read before the Italian Surgical Society, 1888.

"But it was not until 1890 that the two methods were prominently brought before the profession. Prior to this time, beginning with Steele's first operation for the radical cure of hernia in 1874, Czerny's in 1877, Marcy's in 1878, one method after another had followed in rapid succession. While the immediate results of some of these methods were very good, particularly in the hands of their originators, the sum total of results was far from satisfactory and there was in 1890 a strong tendency on the part of the more conservative surgeons to regard with doubt the claims of any of the methods to the designation 'for the radical cure of hernia,' for the reason that the statistics of the most reliable sources showed a proportion of from 30 to 40 per cent of relapses within the first year. In addition the risks of operation for hernia at this time were by no means to be ignored. Four of the largest hospitals in London in 1890 showed a mortality of 6 per cent. The enthusiasm for the radical cure of hernia was beginning to wane when the methods of Bassini and Halsted were published.

"The two methods differed in several important points. In Halsted's method the cord is transplanted more externally so that it lies just beneath the skin and superficial fascia, whereas in Bassini's operation the cord is covered by the aponeurosis of the external oblique as well as the skin and fascia. The most important difference, however, is that in the Halsted method the internal oblique muscle is cut upward from one to two inches before it is sutured to Poupart's ligament. The results of operation have shown this step to be entirely unnecessary. In many cases, we believe, the cutting of the internal oblique greatly increases the chances of recurrence and weakens the very structure we must rely most on for radical cure. Another point of difference is the resection of all but one or two veins of the cord. Here again the results of the method, showing atrophy of the testicle in a considerable proportion of the cases, have proven its disadvantage.

"The unquestionable superiority of Bassini's method to the earlier methods, as well as to those since devised, is shown by the fact that this operation with slight modification is to-day the operation of choice in practically all the clinics of the world. The secret of the success of Bassini's operation, we believe, depends largely on the fact that it was the first operation in which the attempt to cure the hernia was based on a true appreciation of the etiology of hernia."

The object of this paper is to consider mainly inguinal hernia, and more particularly to consider the verity of Kingdon's assertion, and its medico-legal bearing, when he says "That hernia is a disease, and not an accident; that it is a pathologic condition and not merely a mechanical lesion."

Regarding the frequency of hernia, while it may be an interesting point, it is not especially relevant or vital to the object of this paper.

Mansel Moullin,² states "that owing to the frequency of the congenital inguinal variety hernia is met with very often during the first years of life, and at this time is more common on the right side than on the left." The number falls off rapidly and continues to diminish until after puberty. It has been said that one in every four of those over 60 years of age suffer from it. It would appear that at different ages hernia appears to be more prevalent than at others, but during the reign of George I. of England it is stated that about one in every eight soldiers in his army had hernia, while in more modern times we find that the figures vary. Graser³ makes the assertion that about one of every 20 or 30 individuals has a rupture of some sort, but it is an impossible matter to have accurate statistics concerning this point. It is a well-established fact that hernia appears in every social condition, but as averred by Bryant,⁴ it occurs more frequently in the so-called working classes, because hernia occurs oftenest in the most numerous classes, and not necessarily in the most laborious.

Kingston⁵ estimates that in about 34 per cent there is hereditary tendency to hernia. Mansel Moullin says: "Hernia, there is no doubt, is hereditary, or rather the conditions that predispose to it." Manley says: "Hernia is essentially an infirmity, without doubt, in the majority of cases, of a congenital origin. It is in essence a freak of evolution."

Ochsner,⁴ says: "More than one-third of all patients suffering from hernia give a history of hereditary tendency in this direction. This is true especially in patients who have one or both parents with a similar defect."

Manley,⁶ after averring that hernia, without doubt, in the majority of cases, is of congenital origin, says: "Although the mass itself may not always appear at birth, or at least be noticed immediately after delivery, the causes which lead to it, non-descent or mal-descent of the testis, want of obliquity in the canal, prolapse of the infundibulum process, etc., obstruction or stenosis of the emunctory passages, etc., are there. It is in essence a freak of evolution, one of the many so often observed on a rigorous scrutiny at birth, and which under favorable environments like the others, in the majority of cases, will correct itself and disappear with the growth and maturity of the body."

It has been plainly demonstrated that congenital hernia occurs because of the insufficient obliteration of the vaginal process of the peritoneum and in congenital inguinal hernia only the sac is congenital. Again, in congenital hernia proper anatomical conditions favorable to visceral escape always tend to amelioration or permanent spontaneous cure in infancy and early childhood, so that any compilation regarding the frequency of congenital hernia must be considered on a basis of its frequency in newly-born children and not entirely on periods in after life. Much discussion has arisen as to the part played by the vaginal process in the development of inguinal hernia. It is claimed by some authors that the vaginal process cuts an important figure in the formation of all cases of inguinal hernia, while on the other hand authors contend with equal ardor that the vaginal process is of comparatively no importance and has nothing

to do with the development of hernia in later life. Others, like Graser, contend that a middle and more just view must be taken, that the degree of obliteration bears considerably, and that it is uncommon to have free communication between the vaginal process in the peritoneal cavity later in life. However, it is more apt to close at the scrotal end, even as far as the internal abdominal ring, and then remain patent in the region of the cord. According to Graser, Franke found a congenital hernial sac 18 times, i. e., 28.6 per cent. Berekowski found a congenital sac 42 times, i. e., 35.5 per cent. Kacher and Wood 33.3 per cent. There is no doubt but there is an equally large number of cases where the vaginal process is closed below and patent above, thus forming a small funnel into the internal abdominal ring. The relative position of the rings have an important bearing as an etiologic factor in the production of hernia. Where there exists a strong predisposition to hernia and when the infantile type is perpetuated, one ring lies in almost immediate juxtaposition with the other; hence under these conditions there has been practically no inguinal canal at any time. In the infant both rings are so opposed that there is no canal. According to Manley, Camper, in dissecting 17 infants under three months old found the fascia propria or peritoneal investment of the cord continuous with the general cavity, freely open on both sides in 11. It was open on the right side in four, on the left side in two. Hence in the 17 it was completely closed on both sides, at this age in but one. There was no hernia.

No one who has studied this subject can fail to see that nature frequently fails to perfect her process of evolution and must agree with Manley that had the male generative glands been retained in the abdomen as they are in some of the quadrupeds, man would have been spared much misery. There is no doubt but that the inguinal canal is one of the weakest spots in the abdominal wall of any man. There can be no doubt that the constructive integrity of the abdominal walls is the constant moulding factor in many forms of hernia, and the occurrence of inguinal hernia depends upon the integrity of the inguinal canal. It is natural to presume that physical conditions existing in the ring and canal are active in the production of hernia. A wide, straight inguinal canal will more readily permit the occurrence of hernia than one of a contrary character. It has already been stated that the juxtaposition of the rings strongly predisposes to hernia. Again, there is frequently associated with lax abdominal walls a wide inguinal canal, this being accompanied with considerable separation of the pillars of the external ring. There very often occurs an abnormally wide canal owing to the accumulation of fat surrounding the cord, and how frequently fat is prone to create hernia by its separative power within, is hard to say. It is not of importance to speak of acquired predisposition at this time arising in senility from general relaxation of abdominal muscular contraction, nor speak of conditions which arise in consequence of pregnancy, dropsy, tumors, etc. Persons having an abnormally long mesentery owing to dependency and pressure weakens the lower part of abdomen, thus leading to hernia.

Space will not permit the writer to discuss other and various predisposing causes of hernia, but it may be stated as a fact that any cause menacing the integrity of the abdominal walls is likely to predispose to hernia. The writer holds that any surgeon who has made a careful study of the surgery of violence, that is railway and allied injuries, must and will come to the conclusion that traumatic hernia is so extremely uncommon as to leave doubt as to its verity in almost every case.

Again, there is no room for successfully contending as to the possibility of a combination of accidental causes producing hernia without any predisposing factors. Another important point to consider is the possibility of traumatic hernia appearing suddenly in all of its component parts.

According to Coley⁷ Sultan in his recent *Atlas and Epitome of Abdominal Hernias* states: "In the physical examination of a causal relation between hernia and accident we must remember first of all that a hernia complete in all of its parts can never arise at the moment of an accident, or by a single augmentation of the intra-abdominal tension be it ever so great. If the hernia first appears at the time of an accident we may certainly suppose that the hernial sac was either congenital or gradually formed; although it must be unconditionally accepted that a hernia making its appearance at the time of the injury has never completely developed at that moment. A causal connection must nevertheless be recognized since a preexisting condition has been made worse by the accident or injury."

Graser⁸ says: "Kingdon's statement that a hernia is a disease, and not an accident, a pathological condition and not merely a mechanical lesion, applies to most cases of rupture. For if a condition appeared suddenly the physician seeing the case immediately, will usually find evidence of more serious traumatic injury. It is perfectly possible that a hernia may have been gradually developing for some time and that owing to some accidental cause it suddenly increased rapidly in size and becomes evident on inspection. It is quite common in young boys to have a loop of intestine come down suddenly in the vaginal process that has been open since birth. It is not uncommon also to have recurrence after radical operation appear all of a sudden, although this is not the usual procedure. The vast majority of acquired hernias in adults develop very gradually.

The writer was formerly of the opinion that in railway service there was a marked proneness to rupture, but while generally many vocations demand excessive strength and muscular effort on thoracic and abdominal parts, yet it is true that in railway service it is a comparatively small number of railway employes of whom is demanded strong and continuous muscular effort, throwing pressure upon every part of the abdominal cavity, thereby creating pressure upon the abdominal walls, as in lifting and carrying heavy weights. It has been established that hernia in a great majority of instances is the product of long continued muscular effort, this along with structural defect, leads to hernia, and

that hernia is always of slow formation, since very few who are affected with it are aware of its on-coming in its earliest stages, since it develops slowly, gradually and painlessly.

If it had been demonstrated that hernias were produced by sudden, violent and broad muscular use, such as is required in the transportation branch of railway service, then certain it is that this part of the field of the surgery of violence, would bring to view an unending number of hernias, because it can be demonstrated that no sphere of action in any vocation is more completely under the sway of violent and broad muscular use as that of the vocation of railway employe. The surgeon who attends to railway and allied injuries sees thousands of accidents where every form of intense, acute and sudden muscular effort has been used, and when he records the history of these accidents, he finds that rupture as a complication is so remarkably infrequent that he is forced to the conclusion that sudden muscular effort can never be a cause of rupture, for if rupture comes under these conditions it must be not only acquired, but inherited defects which have led to their manifestation.

When we take into consideration the study as to the occurrence of hernias in railway service, it must be understood that physical examination is demanded of all applicants for work, particularly in the transportation department, and this no doubt has a positive influence in lessening the number of hernias found in railway service. From statistics accumulated by the writer one in 210 applicants were rejected for hernia; again, in 567,687 case histories, as made upon the entry books of hospitals, only 512 hernias are mentioned. Out of 89,226 injuries there were mentioned only 404 hernias, and only 194 attempted to obtain compensation for the same. Out of 1,658 abdominal injuries, including such injuries as abrasions of abdomen, 28; concussions of abdomen, 7; contusions of abdomen, 1350; lacerated wounds, 96; incised wounds, 20; burns and scalds, 49; sprains of abdominal muscles, 35; gunshot injuries to abdomen, 18; punctured wounds, 28, etc., no traumatic hernia was manifest. The 404 hernias tabulated under the following headings:

Right inguinal hernia	117
Left inguinal hernia	86
Double inguinal hernia	185
Femoral hernia	6
Ventral hernia	10

The writer notes in a paper written by Dr. Wm. B. Coley and Dr. Preston Sattenhite of New York, on "Traumatism as a Factor in the Causation of Hernia," the following:

"From 1890 up to the present time one of the writers has been connected with the Hernia Department of the Hospital for Ruptured and Crippled, and for more than six years has been in daily attendance. During this period upwards of 50,000 cases of hernia of different varieties have been observed and of this number there are only four in which there were good reasons to believe the hernia was the direct result of injury."

Again, it may be pertinent to quote from Graser the following: "A

hernia is a condition which not infrequently interferes largely with the earning capacity of an individual, even if the rupture is held in place by a suitable truss. Generally an individual with a hernia that can readily be retained in place by a truss can perform only 85 per cent to 90 per cent of the work he was formerly capable of doing, and when the hernia is difficult to hold in place, his wage value may be lessened to the extent of 50 per cent. Only a very small percentage of hernias are the immediate result of accident. A physician at the first examination should question the patient carefully to determine whether the cause can be classed as an accident. A blow or a fall upon the abdomen, slipping or falling while carrying heavy weights with the body in an awkward and unnatural position, especially with the legs spread apart, in ordinary taxing of the physical strength, while lifting, especially when several workmen are carrying a load, and one or more drop the weight or cease to apply any force so that the strain falls upon the one individual. All these conditions come under the head of accident. If physical work is given to an individual disproportionate to his strength, because of his age, or because of some usual occupation, this cause should also be considered under the head of accident."

We well know that there is no symptom characteristic of hernia due to an accident. There are never any signs of acute trauma such as oedema and ecchymosis. Pain is usually present. After several days or even weeks, it is impossible to tell how the hernia appeared, or whether it has occurred gradually or been the result of an accident.

In the investigation of cases occurring in the writer's experience in which the rupture was claimed as being due to violence the examination was carried on on systematic lines, always comparing both sides of the abdominal walls by sight, prior to examining rupture, then to determine whether the person under examination has lax or weakened abdominal walls. This is generally best done in supine position. Here an examination of the external abdominal ring is made to determine whether there is any separation of pillars of the cord, whether or not we have lax intercolumniar fibres, or whether the canal is wide and straight. If it is wide and straight, see whether the cord is surrounded by much adipose tissue. Now, attention should be directed to the healthy side and predisposing factors all noticed, then next follows the involved side. It has been a point of interest in finding the explanation given about the presence of pain and many authors assert that this is due to stretching and traction on the parietal peritoneum.

A later pathology claims that the peritoneum is not supplied to any great extent with nerves or sensation. After a thorough examination has been made it is proper to analyze the evidences presenting. If the patient relates at the time of the occurrence that he had an inordinate amount of pain, and had been more or less nauseated, but still had consulted no physician, then he is in all probability misrepresenting facts. If the hernia is of considerable size and reaches down to the scrotum and the canal is so patulous that the hernia can easily be reduced, either in the supine or standing position, it is safe to say the rupture is of long ex-

istence and is not the result of recent accident or violence. When the hernia protrusion is high up and small in size, and difficult of reduction, there is a possibility that it might have occurred suddenly. A small inguinal ring on both sides and uni-lateral hernia of small extent, likewise points to the possibility of sudden occurrence due to violence.

The writer has in no less than 80 different instances while examining ruptures claimed as due to violence, shown the presence of a smaller one on the opposite side, and almost invariably through this means and close questioning determined that the rupture which had been claimed as recent, has been old, and the incident discovery of new rupture up to that time unknown to patient, was so confusing that truthful statements were obtained.

Family history, if adroitly elicited, often shows that members of at least one branch of the family, if not more, were afflicted with rupture.

The writer has never seen but one case of inguinal rupture in which the rupture was seemingly the product of immediate injury, and that was not really a hernial protrusion but plainly a case where the muscular fibres of the internal and external oblique muscles are separated nearly three-quarters of an inch just above the internal ring.

It may not be out of place to mention an important point given by Graser where he says: "In Russia it is not uncommon for young men who wish to escape military service to enlarge the inguinal canal and stretch or rupture the external ring, which favors the development of a hernia. These cases are easily distinguished from hernias that develop in the usual manner because the external ring is usually irregular, jagged, and infiltrated with signs of inflammation.

According to Coley, Bilfinger's theorem demands that a true traumatic hernia must fulfill the following conditions: First, the hernia must be completely developed after, or at least within a very few days, after receipt of the injury; there must be no predisposition to hernia, no matter of what nature; thus nonlatent hernia, no empty hernial sac. Coley⁹ defines traumatic hernia as a hernia resulting from the direct application of force to that portion of the abdominal walls at which the hernia appeared; or a hernia resulting from the indirect application of force causing greatly increased inter-abdominal pressure.

It is asserted that not infrequently a hernia is claimed to be the result of violence, such as a blow upon the abdomen, or a kick, but this cannot be determined unless an immediate examination be made. All attempts by experimentation towards producing traumatic hernia have failed, and as claimed by Bilfinger are due to the fact that it is impossible to produce artificially many of the conditions of the accident.

It would hardly pay us at this time to quote the opinion of various authors as to the possible occurrence of hernia from trauma, since they are remarkably few in number, but we will quote Manley when he says: "It may be said with emphasis and certainty that the direct application of concussive force is never a primary cause of hernia, that its effects are always secondary and consecutive. That when a hernia is already present, violence which might in the sound, whole individual, be borne

with impunity, may if accidentally applied over the viscera which escaped from the abdominal cavity, cause very painful or mortal consequences. Hence the herniated is not a whole perfect being, so that a comparatively trivial force, which in the normally developed would make no impression, might with him be followed with serious results. There is no evidence that ordinary bodily traumatism aggravate the herniated condition, except in those cases in which injuries applied immediately over the herniated area."

Again, the conclusion of Dr. Wm. B. Coley and Dr. Preston Satterwhite, in their paper on "Traumatism as a Factor in the Causation of Hernia," says: "A very careful examination of all the reported cases of traumatic hernia shows the evidence pointing strongly to the probability of a pre-existing hernial sac in every case. In other words, it is extremely doubtful if traumatisms alone without an open funicular process in the hernial canal can ever produce a hernia."

Finally, as bearing upon the question, we quote the following by W. Rosser of Marburg,¹⁰ "The responsibility of accident insurance companies, as well as corporations, when defendants at law in personal damage suits, based on the occurrence of inguinal hernia, constituting a portion of the whole of the injury sustained is of interest to the surgeon who may be called upon to express an opinion on the subject. The fact that the formation of the most important part of the hernia, namely the sac, occupies a period extending in some instances over many years, and is frequently a congenital condition, and the further fact that the occurrence of the protrusion results from a gradual traction and pushing forward of a certain isolated portion of the abdominal wall should decide the question against the contention that hernia is to be considered as resulting from accident, particularly as a number of such hernias depend upon peculiar local conditions, such as the existence of lipoma etc. On the other hand, the occurrence of strangulation is always to be considered an accident in connection with accident insurance, and may, with the presentation of proper proof be justly claimed as a factor in the settlement of claim in personal damage suits."

In conclusion it must be said that Kingdom's aphorism, which avers "that hernia is a disease and not an accident; that it is a pathological condition and not merely a mechanical lesion," is as near true as an aphorism can be. Nor can it be gainsaid that the constructive integrity of the abdominal walls is the moulding factor in many forms of hernia, or that the inguinal canal is one of the most exposed and at the same time one of the weakest parts in the abdominal wall of each and every man, and the occurrence of inguinal hernia bears a positive relation to the integrity of the inguinal canal. Nor can it be denied a wide, straight inguinal canal more readily permits the occurrence of hernia than one of contrary character and associated with a wide canal, than are lax abdominal walls and considerable separation of the pillars of the external ring. Again, the part played by the vaginal process is of undoubted effect; that its degree of obliteration is a positive factor and it is uncommon to have free communication between the vaginal process in the

peritoneal cavity later in life, and it is more likely to close at the scrotal end up to the internal ring and then remain patent in the region of the cord. It has been demonstrated that there are equally large numbers of cases where the vaginal process is closed below and patent above. These very often occur on abnormally wide canals owing to the accumulation of fat surrounding the cord, if Bayer's¹¹ assertion be true that complete absence of fat in the inguinal canal is characteristic of congenital hernia, then there must be not an inconsiderable number of acquired cases of hernia through the expansive power of fat. It must be remembered predisposition cuts an important figure in the production of hernia generally. Physical weakness leading to emaciation, general relaxation and consequent hernia in young children, while owing to the relaxation of muscles and fascia in old age there is a tendency to multiple ruptures or where the lower portion of the abdomen in the aged changes through disease, leading to separation of the anterior abdominal wall. Again, conditions associated with extreme distension of the entire abdominal cavity and the incident stretching of the abdominal walls leading to hernia; this occurs especially in pregnancy. Again, an abnormally long mesentery and its consequent pressure and dependency weakening the lower part of the abdominal walls so as to produce hernia, and also the presence of the subserous lipoma.

In summing up the examination of any case it is to be remembered that there are no symptoms characteristic of hernia due to trauma, that is, there are never any signs such as oedema, ecchymosis, etc. After several days alone without considering periods beyond that, it is impossible to tell how the hernia appeared, whether it has occurred gradually, or suddenly as a result of an accident. It is established beyond all doubt that a hernia may exist for an indefinite period and not be recognized by the patient until an examination by a physician indicates its presence. It is the consensus of opinion with the great majority of authorities upon this subject against the possibility of the occurrence of hernia as a result of trauma. If it is possible for traumatic hernia to occur the manifestation of the same is of such a very rare occurrence as to "hardly have any significance from a practical standpoint."

Again, the highest authority deem it impossible and contrary to experience to have a sudden development of the hernial sac. Authorities claiming traumatic hernia possible define the following conditions necessary in making a diagnosis: It must be completely developed immediately after or at least within a day—two days—there must have been no predisposition to hernia no matter of what nature, that is no latent hernia, no empty hernial sac. The assertion of Manley, until disproven, stands when he says: "I am able to say without any qualification whatever, that hernia is never attributable to traumatism alone unless the violence be applied by some hard, sharp-pointed instrument or substance, which either punctures or rends the abdominal wall, and that when a hernia appears after the application of ordinary force it can always be

demonstrated that it had previously existed, the accident or injury being an incident. . . . It may be said with emphasis and certainty that the direct application of concussive force is never a primary cause of hernia; that its effects are always secondary and consecutive."

Again, it is equally as pertinent to the subject the assertion of Sultan quoted by Coley who said "that hernia complete in all of its parts can never arise at the moment of an accident or by a single augmentation of the intra-abdominal lesion, be it ever so great. If the hernia first appears at the time of an accident we may certainly suppose that the hernial sac was either congenital or gradually formed."

Again, it should be remembered that in every case of so-called traumatic hernia there is "evidence pointing strongly to the possibility of a pre-existing hernial sac. In other words it is extremely doubtful if traumatism alone without an open funicular process in the hernial canal can ever produce a hernia."

Finally, it must be held that after a citation of all the facts above mentioned regarding hernia, they are incompetent to prove that traumatic hernia is by itself, or in connection with other stated causes or facts, ever an absolutely established fact. The burden of proof being upon the affirmative side, hence the affirmative must demonstrate beyond all reasonable doubt that neither acquired predisposing defects nor constructal congenital defects were non-existing in any given case of traumatic hernia; it must be shown that the case of traumatic hernia under consideration developed immediately after, or within a day or two, and that there existed in the case no predisposition to hernia, no matter of what nature, and that in every case of traumatic hernia there is evidence pointing strongly to the probability of a pre-existing sac; that it is extremely doubtful if traumatism alone without an open funicular process in the hernial sac ever produced a hernia. The affirmative must prove the falsity of the assertion that when hernia appears after the application of ordinary force it can always be demonstrated that it had previously existed, the accident or injury being an incident, and likewise disprove the assertion that the direct application of force is never a primary cause of hernia, that its effects are always secondary and consecutive.

Still further the affirmative must prove that hernia complete in all its parts can occur and that at the moment of the accident, no matter how great the augmentation of the intra-abdominal lesion. If the hernia first appears at the time of the accident we may certainly suppose that the hernial sac was either congenital or gradually formed. Medico-legally, then, the existence of traumatic hernia has not been proven, for the conclusion forced upon us by all the facts cited do not seem to be competent to prove that traumatic hernia occurs according to the common course of events, either by itself or in connection with other causes, or facts, as stated. All cases of traumatic hernia cited by competent author-

ity up to the present time present at least some elements of doubt which cannot be perfectly eliminated.

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INJURIES TO THE EYES OF THE CHILD INCIDENT TO INSTRUMENTAL DELIVERY.*

By JOHN GREEN, JR., M. D., of St. Louis.

The subject assigned to me this evening—"Injuries to the Eyes of the Child Incident to Instrumental Delivery"—is really a subdivision (though a large one) of the more comprehensive subject "Injuries to the Eyes of the Child During Labor." The larger question was dealt with by Bloch¹ to whom must be accorded the honor of being the first to study eye injuries occurring during the act of birth. Subsequent papers by Schmidt-Rimpler,² Truc,³ Praun,⁴ Sidler-Huguenin⁵ and Thomson and Buchanan⁶ have touched upon various aspects of the question. We are indebted to Bruno Wolff⁷ for the most elaborate exposition of the subject, his paper gaining special value from containing a synopsis of all cases reported up to 1905. In the preparation of this paper, I have drawn largely from the material collated by the last named author.

It will be noted that all the authors mentioned above are ophthalmologists, a fact which would lead one to infer that this subject has been but little discussed from the standpoint of obstetricians. Such, in fact, is the case. Statistics emanating from obstetrical sources give one the impression that injuries to the eyes are excessively rare. Thus in the report of 39,317 confinements which came under observation in the obstetric department of the Charite in Berlin, only six cases of eye injury are specifically mentioned. *Per contra*, individual obstetricians, who have paid special attention to the injuries of the infantile skull in difficult labors, as for example, Nagel,⁸ have observed injuries to the eyes in greater proportion than the foregoing statistics would indicate. When we remember that Wolff's 112 cases come almost exclusively from ophthalmological sources and that numerous cases of ocular injury in the new-born, especially those which occur in still-born children, never come under the observation of an ophthalmologist, it seems highly probable that ocular injuries are more frequent than obstetrical data would indicate. The attainment of statistical accuracy is beset with many difficulties, as will be fairly obvious when we recall that the obstetrician will ordinarily take cognizance only of the grosser external lesions and will not concern himself with minuter alterations in the interior of the eye.

The brief time at my disposal will not permit an extended reference to the literature and I have therefore thought best to present a synopsis of one or more cases illustrating the various types of ocular injury incident to instrumental delivery, accompanied by such obstetrical data as may render clear the difficulties encountered by the accoucheur. Discussion will be confined to injuries in the strict sense of the word, excluding from consideration such minor and transient effects of instrumentation, as abrasions of the skin of the lids, congestion of the conjunctiva, and

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insignificant subconjunctival and subdermal hemorrhages. The injuries are considered in the order of their frequency.

Injury to the Cornea: This form of injury is the most frequent of all ocular injuries. It has been investigated especially by Thomson and Buchanan,⁶ who describe two forms: (1) The opacity is diffuse and soon passes away. (2) Linear or irregular stripes of opacity which are permanent. The first form depends upon edema of the cornea, the second upon tears in Descemet's membrane. Buchanan relates the following case illustrative of the second type: A six year old boy had an internal squint of the right eye incident to a high degree of inverse myopic astigmatism. Examination revealed several vertical streaks of opacity in the nasal third of the cornea of this eye. The delivery was a very difficult forceps, with wounding of the right temple and ecchymosis of the lids. Buchanan's suggestion that many cases of unilateral high grade astigmatism should properly be ascribed to ocular injury at birth, seems distinctly plausible.

Fracture of the Frontal Bone and Orbital Roof: Author—Lomer:⁹ Pressure marks on the frontal bone accompanied by infiltration and edema of the eye lids; moderate exophthalmus; necropsy revealed an intracranial fracture of the roof of the orbit which was partly filled with blood effusion. Obstetrically considered, the head lay over the pelvic brim in the first vertex position. Sagittal suture transverse. Pelvis flattened in moderate degree. Forceps so applied that the right blade, corresponding to the position of the head came to lie in front in the pelvic brim. Difficult extraction.

Protrusion of the Globe (Exophthalmus): The forces producing protrusion of the globe appear not to be identical in all cases. For instance, Beaumont¹⁰ reports a case in which the forceps blade acted in a manner similar to the speculum with which, in the operation of enucleation, the eye ball is dislocated forward. In Zweifel's¹¹ patient, the exophthalmus occurred through the squeezing together of the skull bones by the forceps. Fracture of the frontal bone is an occasional complication.

Subconjunctival Extravasations: Extensive subconjunctival extravasations are usually accompanied by other injuries. Leopold¹² reports the following case: Blood extravasated under the conjunctiva of both eyes and the anterior chambers filled with blood. Frontal bone severely crushed. Forceps applied to the head while it was still high up.

Paralysis of Ocular Muscles: Author—Bloch:¹³ Inward squint of the left eye which was first observed in infancy. Scars over the left malar bone and right side of lower jaw from forceps. Left abducens paralysis, atrophy of the optic nerve, and pigment formation in the retina. All four deliveries were difficult, the first two being completed with forceps. This (4th) child required repeated attempts at extraction. In Nettleship's¹⁴ case, both right 6th and 7th nerves were paralyzed. Brow presentation in somewhat narrow pelvis, one blade of the forceps lying behind the right ear, the other partly in front of the left ear.

Hemorrhage into the Anterior Chamber (Hyphema): Hemorrhage

into the anterior chamber, though in itself frequently of little moment, is usually accompanied by severer injuries such as crushing of the frontal bone, choroidal and retinal hemorrhages, etc., and its occurrence is therefore of grave prognostic significance. Wintersteiner's¹⁵ case: At birth the conjunctivæ were infiltrated with blood and there was blood in both anterior chambers. The child died after nine days, of uncontrollable epistaxis. Examination of the eye revealed diffuse extravasations of blood between the ciliary body and sclerotic, in the sub-arachnoid, reaching back to near the equator of the globe, in the episclera and in the sclerotic. Remains of larger blood collections in the anterior and posterior chambers. The optic nerve, the posterior part of the choroid and almost the whole retina were free from extravasation. The mother was a primipara with generally contracted pelvis. Conj. vera 9 cm. Forceps to the head in the pelvic brim, child deeply asphyxiated but revived. Wintersteiner believes that through direct pressure of the forceps blade, a crushing of the globe on one side and a fracture of the ethmoidal cells on the other had taken place.

Optic Atrophy: Author—De Beck:¹⁶ Divergent squint of the left eye with dilatation of the pupil. Typical white atrophy of the optic nerve head had existed from birth. Definite skull depressions over the left eye and occipital protuberance. Delivery, difficult forceps.

Injuries of the Lids: Author—Truc:³ (1) After birth it was noted that there was enormous swelling of the lids and a laceration of the skin from forceps. Four years later a scar remained at the site of injury and the child had internal squint. Forceps delivery, the grasp on the skull being in the direction from before backwards. (2) Author—Steinheim:¹⁷ After forceps delivery, it was seen that the external part of the upper lid had been torn away. Four months later a marked ectropion had developed.

Crushing of the Globe: Steinheim:¹⁷ Following forceps delivery, there was found a broad tear upon the nasal ridge and a tear through the left upper eye lid. Left globe was completely crushed.

Avulsion of the Globe: The most formidable of all ocular accidents incident to forceps delivery is complete avulsion of the globe. Authors—Thomson and Buchanan:⁶ After delivery the baby's left eye was found lying on the cheek, held only by the conjunctiva and external rectus. Over the left frontal and parietal bone was a large spoon shaped depression. No tear of the eye lids, although the lower lid was somewhat swollen. Right sided opacity of the cornea. The mother, a multipara with narrow pelvis. Fetal head unusually large in transverse diameter of the pelvis. Axis-traction forceps repeatedly applied to the head in its longitudinal diameter. Delivery only accomplished after symphysiotomy. In pelvic outlet the forceps were applied in the biparietal diameter.

Author—Maygrier:¹⁸ After delivery one eye was closed and the lids appeared as though pressed back into the orbit. On separating the lids no trace of the eye ball could be found. It was afterwards discovered among the towels. Death shortly intervened. Necropsy showed that a fragment of bone from the fractured orbital roof had cut through all

the ocular attachments like a guillotine. The delivery was a forceps in a narrow pelvis in the course of which two people pulled together on the head.

The foregoing comprise the principal ocular injuries incident to instrumental delivery. I will simply allude, without further comment, to rare injuries of which only one or two instances have been reported. These include deep intraocular hemorrhage, abscess of the orbit, oculomotor palsy, traumatic cataract, infantile glaucoma, iridodialysis, fracture of the lachrymal bone, tear of the cornea and sclera, rupture of the choroid, exophthalmus and traumatic paralysis of the levator palpebrae and rectus superioris.

It is thus seen what an array of ocular injuries have occurred in the course of instrumental deliveries and were one to base a judgment solely on the facts presented, that judgment might well be definitely antagonistic to the employment of obstetrical forceps. In all cases cited above forceps were employed. So far as my limited knowledge of obstetrics goes they were absolutely indicated. In how many cases the technique was faulty or the accoucheur unwise in his choice of the period of labor for instrumentation cannot be determined. It is certain, however, that in many cases the obstetrical operation was in the hands of a thoroughly competent accoucheur and the operation performed *seccundum artem*. It should be noted that the less severe and remediable injuries greatly outnumber the severe and irremediable—for instance, opacity of the cornea, many instances of which undoubtedly were simply cases of transient edema and the more severe types in which Descemet's membrane was torn and astigmatism developed is specifically mentioned thirty-two times. On the other hand the most severe injuries as represented by crushing and avulsion of the globe occurred only four times each.

In all the cases mentioned above forceps were applied, but the inference that all the injuries were directly due to instrumentation would be entirely erroneous. Of interest in this connection is Wolff's review of fifteen cases of injury in which the forceps were not employed. The injuries range in severity from simple edema of the lids to complete avulsion of the globe, and include in addition to the just mentioned types, fractures of the orbit, depression and fracture of the frontal bone, facial palsy with resulting lagophthalmos, exophthalmus, diffuse opacity of the cornea, paralysis of the abducens and of the elevator and depressor of the eye ball. For purposes of discussion, Wolff has adopted the following classification:

1. Labors in which the head is born last.
 - (a) Turning.
 - (b) Primary pelvic presentations.
2. Labors with the head presenting.
 - (A) Spontaneous deliveries.
 - (a) Usual vertex presentations.
 - (b) Vertex positions with prolapse of an arm.
 - (c) Frontal presentation.

(d) Face presentation.

(e) Brow presentation.

Permit me to cite a few examples.

Dittrich.¹⁹ Depression of the left frontal bone, below the middle of the left coronal suture, and over the border of the fissure between the frontal bone and the sphenoid. A penetrating fracture of the bone. Fracture of the left orbital roof. Breech presentation; child still-born. A doctor was only sent for when the midwife could not deliver the head.

Hofmann.²⁰ Full term, strong child. The right eye ball has been gouged out and hangs on the cheek by the not quite ruptured inferior rectus muscle. Multipara II. perfectly spontaneous delivery in the first vertex position. During labor, the patient took 5 ten grain powders of ergot. After a fourth confinement the woman died. Necropsy showed: Trochs. 11 inch. crests $10\frac{1}{2}$ inches; spines 8 inches; conj. 3 inches; trans. diameter, $4\frac{3}{4}$ in. The promontory projected forward markedly, and had a sharp border. In the whole pelvis, no deformity, no bony prominence or anything of the kind.

Sidler-Huguernin⁵ reports three cases of total paralysis of the abducens and one case of paralysis of the elevator and depressor of the left eye. In all four cases it was ascertained that the labor was very slow but no artificial help was given.

Thomson and Buchanan.⁶ Diffuse opacity of both corneae. Vertex presentation, arm prolapsed by the head.

De Wecker.²¹ Avulsion of the globe. Face presentation. The orbit was taken to be the anus and the eye was destroyed by the examining finger.

In this connection, it is well to mention the extraordinary frequency with which small retinal hemorrhages which have their origin in the act of birth, may be demonstrated. Thus Schleich²² in 150 new born children noted in 49 (32 per cent) fine extravasations in the retina. Further discussion of this interesting point would be out of place in the present paper.

In attempting to arrive at a just conclusion, I believe we should look at this question from two standpoints—the ophthalmological and the obstetrical. From the ophthalmological standpoint, ocular injuries incident to instrumental delivery may be divided into two principal groups: First, the severe type in which there is serious impairment of the ocular function, grave facial and ocular disfigurement and destruction of the eye ball; and second, the mild type in which the injury is essentially of a transient nature and either disappears entirely in the course of time or leaves such traces as may impair but not destroy the eye as an organ of vision. An estimate based on the 112 cases epitomized by Wolff shows that not over 25 per cent could be classed as severe, while 75 per cent are properly placed among the mild injuries.

From the standpoint of the obstetrician, it should be remembered (1) that nearly all of the deliveries were difficult, many of them extremely so. (2) That the indications for instrumental interference were almost invariably urgent from the maternal side. (3) That frequently the in-

dications were equally urgent from the fetal side. (4) That in certain cases the forceps were not directly responsible for the ocular injury. (5) That the maternal morbidity and mortality was extremely low. (6) That the fetal mortality was not high and the fetal morbidity, apart from the ocular injuries, was insignificant.

Let the ophthalmologist, who would protest against the use of the forceps on the ground of possible injury to the baby's eyes, remember that upon the accoucheur rests the greatest responsibility that falls to the lot of physicians, viz., the preservation of two human lives. Let us not for one moment forget that responsibility. Viewed in this light, how trivial seems even the loss of an eye in comparison with the possible sacrifice of the mother's and the baby's life.

It appears, then, that the possibility of injury to the infant's eyes can hardly weigh as a serious contraindication to the employment of obstetrical forceps, but the possibility of such injury should always be borne in mind by those who attend women in confinement. After prolonged or difficult labors, whether spontaneous or instrumental, any marks of violence to the eyes or ocular adnexa of the baby, or possibly even in the absence of such marks, a searching examination not only of the external ocular structures but the deeper parts of the eye is urgently demanded for the sake of the future ocular welfare of the infant.

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THE RELATION OF INSTRUMENTAL DELIVERY TO TRAUMA OF THE CHILD'S NERVOUS SYSTEM.

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There is ground for the assumption that in the scheme of existence relating to the propagation of the species there is no place for instrumental deliveries. It is likewise a warrantable conclusion that evolution demands for the progress and improvement of the human kind an act of birth which shall damage neither the mother nor the child. The exceptions to these general principles must depend upon the factors which play their part in the production of abnormal deliveries, and the factors which result from the application of instruments or in the manipulative efforts directed towards overcoming hindrances to birth. It is in the consideration of such facts that a notion of the importance of injury to the nervous system through abnormal deliveries can be obtained. Another group of facts that is given less importance than it deserves, is the influence which pre-existing diseases affecting the foetus may have upon the living child. These factors may act during birth, before and immediately after birth. They may be, however, in such close proximity to the act of birth itself that they cannot be separated from it in any analysis of probable causative influence.

In attempting to determine the frequency and importance of such injuries as have been here outlined it must be borne in mind that in every case we are dealing with one absolutely unknown factor, and that is the condition of the child before the mechanism of birth is set in action.

The only means at our disposal of approaching this subject is the study of large numbers of cases reported from hospitals. The weakness of statistical proof is manifest at the outset. This source of error must then be taken into account in any final conclusion. There is therefore little place for dogmatism, but much room for as fair a discussion of the question as the facts we are able to ascertain permit.

In the statistical study there are at hand two sources of facts. The first is the collected histories of large numbers of diseases of the nervous system and the mind as seen in asylums, hospitals and practice, in which the data of birth are given, obtained in many instances years after that event took place. The second is the records of nervous symptoms or diseases observed shortly after birth which can be attributed to some accident in the act of birth, using the term accident in a very broad sense. It is readily seen that of these two sources of material the latter is by far the more valuable, on the other hand the later development of certain diseases make the former group in a sense necessary. It is of course difficult to bring together conclusions derived from so different a lot of facts, and in this lies, I believe, much of the reason for the difference of opinion which has always existed on the question under consideration. In any large body of histories relating to insanity, epilepsy and infantile paralysis of various kinds, a certain percentage of abnormal deliveries will

be found. The attempt is made to seek for an etiology more tangible and more material than heredity, previous infection of the mother, or other causes clearly in evidence.

This percentage is then translated into an etiological fact. Consequently there has been handed down by tradition the statement that accidents at birth are responsible for a great variety of nervous and mental diseases. The fact thus apparently proven resting, as I have said, upon a percentage of abnormal deliveries, is more closely approached and the analysis of causes determined. The known abnormal events are taken to be the causative factors, so these diseases are variously charged to long labors, delayed labors, instrumental deliveries, faulty positions, etc. The fallacy of such reasoning rests upon the fact that previously developed etiological factors can neither be studied nor their proper importance determined. In other words, ignorance of the condition of the child before it was born invalidates most of the conclusions based upon conditions found after birth. Unqualified statistical evidence of this kind I propose to omit in the consideration of the question as it now stands. Approaching the matter more closely, there is found the following mechanical causes acting in the production of possible injuries to the nervous system of the new born child. Delayed labor, instrumental delivery, faulty position and manipulation. Naturally several of these factors can be taken together from the point of view of etiology.

Any of these, or a combination of them, may be the cause of definite injury to the nervous system. The injury is the more definite the more direct its application. For example, a direct twisting of the arm produces a brachial palsy by stretching the brachial plexus, the resulting neuritis being the so-called birth-palsy. The pressure of the forceps over the mastoid produces facial paralysis by direct pressure on the facial nerve. The cervical plexus can be affected in a similar way. Fracture of the skull, or pressure severe enough to produce meningeal hemorrhage, can conceivably be brought about as the result of forces acting in a purely mechanical way. Such facts are matters of actual demonstration. The relation in instances of this kind between cause and effect is so close that the deduction is irresistible that the obstetrician's art, especially its instrumental application, can be justly charged with that amount of damage. It might be mentioned, in this place that most of the damage of this nature is the result of clumsy and often useless instrumentation or manipulation, so that in any final casting up of the probable damage, the burden of the unskilled in increasing the percentage of occurrence must be taken into consideration. Thus far we are on fairly certain ground. No well informed obstetrician will dispute the conclusions here set forth. It might be stated therefore that diseases of the nervous system which may depend upon direct or indirect head traumata, pressure neuritis of various kinds in which the evidence of mechanical force is certain, and a small percentage of the meningeal hemorrhages in which the rupture of the blood vessels is a direct effect of injury during the course of delivery, may be said, without much fear of controversy, to be due to accidents in which the application of forces other than the natural ones must

of necessity be employed. The percentage of such accidents is very uncertain differing largely with the material. In a recent report 499 applications of forceps gave thirty cases of facial palsy. In a series of 213 autopsies at the Baudeloque hospital there were found to be seventy of normal weight, and of these cases there were nine in whom were found evidences of hemorrhage into the brain substance. Six of these occurred after forceps operations of various kinds. Even in as limited a series as this it is seen that the lack of a preoperative history invalidates in a large measure the result. It has been stated that no well authenticated instance has as yet been reported of a case of meningeal hemorrhage due to the act of birth itself. Yet the number of cases of this kind in the history of which there is a perfectly normal delivery is not inconsiderable. This points squarely to the fact that every pathologic condition found after an abnormal delivery may have either existed before the mechanism of birth was set into activity, or was the result of some tissue anomaly undiscoverable until the child was born. Prenatal pathology could no doubt explain many of the symptom-complexes that have been attributed to the act of birth itself, or to the manipulations accompanying it.

This brings us naturally to the consideration of the diseases that have been attributed more or less vaguely to the injuries received during birth, and this refers largely to the injuries resulting from the application of forceps. Idiocy, imbecility, epilepsy, hydrocephalus, encephalitis, cerebral hemorrhage, Little's disease, diplegias of various kinds, etc., have all been attributed to these agencies. Idiocy, imbecility and epilepsy are the ones that are most constantly and most insistently mentioned. It is of frequent occurrence to find in the histories of patients with these affections, long, abnormal, or instrumental labors. The conclusion naturally advanced is that something has happened during labor which produced cerebral conditions resulting finally in these diseases. It is a very difficult matter to determine what importance to give to this assumption. The constant assertion that it is so, and the undoubted larger number of histories of abnormal deliveries in this class of cases, force us to consider the etiological significance of this factor with some degree of seriousness. The post mortem examination of the brains of idiots and imbeciles made many years after birth very often shows changes in the brain itself that to some extent at least allow them to be brought into relation with the clinical symptoms of mental backwardness. The changes are, however, so variable that it is impossible to admit more than a possible connection with traumata received in the course of instrumental delivery. Pressure on the foetal brain, that is, on the brain of a child in the act of being born, sufficient to produce rupture of a blood vessel, is not likely to produce permanent enough damage of the cortical brain cells to result in the mental changes classed as imbecility or idiocy. If this is true of so gross a condition, it must be doubly true of so intangible a cell change which gives rise to epilepsy. In epileptic brains, as you are no doubt aware, there are no definite pathological variations from the normal, at least any that are constant or

characteristic. The pathology of epilepsy is as yet an unsolved problem. In other words, from the point of view we are now considering, the cell changes must be of so delicate a nature that they escape observation by any of the methods of technique now at our disposal. The traumata of birth, instrumental or otherwise, are by their very nature gross and mechanical. An epilepsy dependent upon them must therefore be the result of material changes so definite that they can be easily determined. As a matter of fact we do find that kind of change in the cases where epilepsy is a part of the symptom complex; for example, in the hemiplegic imbeciles in combination with epilepsy. This is a very common condition. I believe that it is a warrantable conclusion, at the present stage of our knowledge, to admit that epilepsy, except in the form just mentioned, is not a common enough sequence of birth injuries to be of any statistical importance. Meningeal hemorrhages are certainly, in some instances, produced by forceps injuries. If these cases recover from the birth trauma, they may develop hemiplegias of various kinds, epileptic manifestations and the resulting mental impairment. Even in this class of cases, which must be very infrequent, the absence of any antepartum history in respect especially to diseases of the blood vessels, invalidates to a large extent even so modest a conclusion as this. It has been asserted that a long-delayed labor produces toxic changes in the nerve cells which afterwards give rise to all the conditions, or any of them, which have been just mentioned. This assertion has so often been mentioned and by men of so adequate an experience, that we feel bound to pay some attention to it. The evidence in support is largely that of the personal experience of men whose opinion must be given due respect. The changes produced by delayed labor for which, in some instances, forceps are used, that is the changes following deep cyanosis, are not such as are commonly regarded as having anything to do with epilepsy, idiocy and the like. As opposed, there is the immense number of normal children who have been through the most severe conditions approaching strangulation during birth.

It must be remembered likewise that in a certain proportion of imbeciles, for example, there is present at birth changes in the skull which are of themselves productive of delayed labor, or pathologic labor. Instrumental damages in this class of cases cannot be said to be an important etiological factor. There are a number of diseases found in infants which are the result of slowly developing degeneration in the motor system. The diplegias and Little's disease are examples of this kind. It can be safely asserted that in the absence of any condition due to gross lesions, such as fracture or hemorrhage, none of the system diseases of this variety can be attributed to injuries received during birth.

COXA VALGA; UNUNITED FRACTURE OF THE FEMORAL NECK: REPORT OF TWO CASES.

By NATHANIEL ALLISON, M. D., of St. Louis.

The two cases here reported present examples of some of the surgical conditions about the hip articulation.

Acquired coxa valga, or collum valgum, is a condition comparatively rarely seen, and when seen is very often of small importance, clinically speaking. It depends for its development upon an error in the nice adjustment of the two forces, viz., growth and weight-pressure, during the growing period. The literature on this subject, though not extensive, is sufficient to establish, through the writings of several observers, the fact that an opening of the angle formed between the neck and shaft of the femur follows, by means of the static conditions created, a disarrangement of the normal relationship between growth and weight-bearing at the upper end of the femur. Gangolphe has reported a case of a young man of twenty years of age who possessed genu valgum, due to a septic process, in one knee, and coxa valga, as a result, on the other side. Humphrey has shown that the more open angle of adolescence may be preserved in adult life, where superincumbent weight is removed, by a cause such as paralysis, amputation, or constant confinement in bed. Hoffa, Manz, Young and Theim have reported cases that depended for their development on an injury to the upper femoral epiphysis, with consequent changes in the growth of the epiphyseal line. Galleazzi reported a year ago two cases of coxa valga, which he corrected by subtrochanteric osteotomy. Aside from his paper, little has been suggested in the way of treatment, which would tend towards the correction of this deformity. A possible explanation of the scarcity of operative interference is that the acquired cases are usually discovered in subjects who present other lesions contraindicating operative treatment. David reports an improvement of 7 degrees in the angle of depression, produced by fixing the thighs in an exaggerated position of adduction and inward rotation.

CASE 1. ACQUIRED COXA VALGA.

F. S., seen first in 1904, age 10 years, gives the following history: Has always been healthy, and aside from an injury to his right hip, which occurred at the age of five years, has had no trouble, further than the lameness which followed this injury. The injury consisted of a fall from a picket fence, the child striking directly his right hip. His limb was sore for some weeks, and very sensitive. After this time, he walked upon his limb, without pain, but with it always in an abducted, externally rotated position. August, 1904, examination revealed the following facts: Healthy boy, normal development, no signs of rickets. Spine and all joints except the right hip normal. Right hip: Abducted to angle of 60 degrees, flexed 20 degrees, externally rotated 90 degrees. All motions limited to a few degrees. Spasms of adductor tendons. An

X-ray plate was taken of the right hip, which revealed an abnormal condition of the acetabulum, probably the result of a fracture. Under an anesthetic, the hip was manipulated through 45 degrees flexion and 20 degrees abduction. External rotation and internal rotation were not employed, and the limb was placed in plaster-of-Paris, short spica. After two weeks, this was removed, and walking was painless. The amount of motion in the hip was not materially increased. Operation was suggested to the parents, but was refused, and the boy was taken home. August, 1906, boy returns to the hospital for operative treatment. X-ray examination at this time: Abduction 30 degrees, flexion 15 degrees, external rotation 90 degrees. The angle of depression of right femur calculated at 164 degrees; that of left femur, 125 degrees.

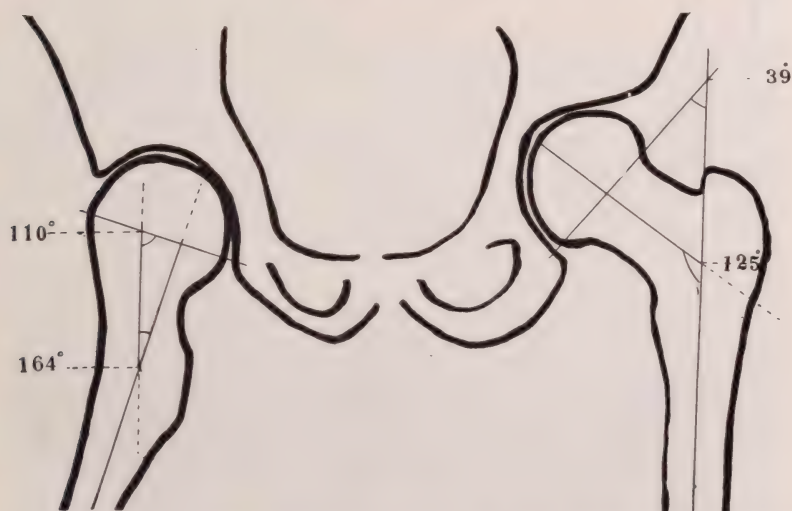


FIG. 1.—Skiagram tracing before operation, showing increase of angle of depression to 164 degrees on right side, and angle of elevation to 110 degrees.

MEASUREMENTS.

	Right Side	Left Side
Ant. sup. spine to int. mal.....	29¾	28¾
Ant. sup. spine to tip. great troch.....	5½	4½
Ant. sup. spine to upper patella border....	15¾	14¾
Length of lower legs on both sides the same.		

The great trochanter on the left side lies in the Roser-Nelaton line, and Bryant's triangle presents normal isoscelesism. On the right side, the trochanter major is much below and behind its normal situation, and is difficult to palpate.

General Attitude.—The boy stands and walks with an abducted, externally rotated thigh, which causes a secondary scoliosis. He cannot bring his feet together, nor alter the position of his hip. Passive motion in the right hip is limited to a few degrees in any direction.

Diagnosis.—Considering the actual lengthening and the position of the right lower extremity, a diagnosis of coxa valga was made, as the

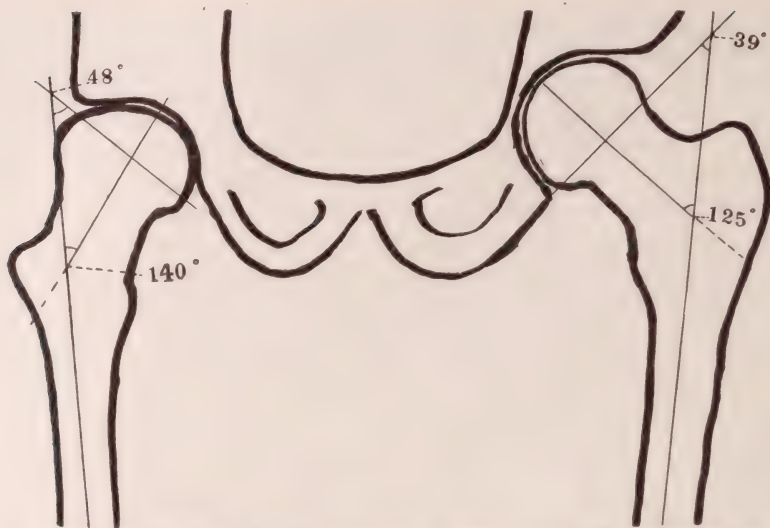


FIG. 2.—Skiagram tracing after operation, showing angle of depression on right side 140 degrees; angle of elevation 48 degrees.

lengthening of one inch can be accounted for by the increase in the angle of depression of the femur on the right side.

Treatment.—In November, 1906, an osteotomy was done on the right



FIG. 3.—Photograph of case, showing abduction, externally rotated flexed position of thigh, with one inch actual lengthening right side.

femur, the osteotome dividing the bone just below the great trochanter. The bone was here divided transversely, thorough division having been accomplished subperiosteally; the lower fragment was rotated inwards to a position of 10 degrees internal rotation, and the thigh was adducted to 10 degrees adduction. The flexion of 15 degrees was reduced. In this position, the limb was confined in plaster-of-Paris for a period of six weeks. An X-ray examination was then made, which showed an angle of depression of 140 degrees.

MEASUREMENTS AFTER OPERATION.

	Right Side	Left Side
Ant. sup. spine to int. mal.....	28 $\frac{7}{8}$	28 $\frac{3}{4}$
Ant. sup. spine to tip great troch.....	4 $\frac{3}{4}$	4 $\frac{1}{2}$
Ant. sup. spine to upper patella border....	15	14 $\frac{3}{4}$



FIG. 4.—Photographs taken after operation, showing improvement in position.

Position of Thigh.—Abduction, no degrees; flexion, 10 degrees; external rotation, 5 degrees.

General Attitude.—Boy stands with feet together, no distortion of trunk. Anterior superior spine equal, no pelvic tilting. Active motion in the hip not possible; passive motion limited to a few degrees. Walks without pain, and peculiarity of gait is much lessened.

This case represents traumatic coxa valga, in typical form. The injury sustained was unusual. None of the reported cases in the literature show such an injury. The case is interesting in that it shows the error of de-

velopment which will follow a sufficient disturbance of the relationship that exists between superincumbent weight and growth pressure. The boy having injured his acetabulum, was allowed to remain in bed during the early part of his recovery, with his thigh in an abducted, externally rotated position. This occurred at the age of five years. It is to be presumed that the epiphysis of the head became lodged in the process of repair, in the acetabular cavity, so that when the child began to get about, he assumed an abducted, externally rotated position, with his right thigh. Walking in this position, the strain thrown upon the upper end of the femur was abnormal, in that to compensate for his abduction, his weight-bearing line was transmitted directly to the long axis of the femur, by tilting his trunk. This abnormal force, acting through the years of greatest bone development, produced an opening of the femoral angle of depression, and in consequence an absolute lengthening of the bone. The object of treatment was to attempt a return of the normal femoral angulation, so that as future development takes place, the bone structure and external contour of the upper femoral extremity may approach the normal.

The further treatment of the case will have for its object active and passive manipulations of the hip, to increase the range of motion, and observations upon the angle of depression to discover what transitions it may pass through, as development proceeds.

CASE II. UNUNITED FRACTURE OF THE FEMORAL NECK; EXCISION OF THE FEMORAL HEAD; ESTABLISHMENT OF A NEW JOINT.

This case is interesting principally in the fact that it shows a rather unusually favorable recovery from a condition which is apt to be considered hopeless from a surgical point of view.

The history is as follows: The patient is a woman sixty-two years of age. In the spring of 1905, she fell on a slippery sidewalk, and sustained a complete intracapsular fracture of the left femoral neck. She was put to bed and treated with traction and fixation. At the end of six months, union had not taken place at the seat of fracture, and surgical treatment was discontinued. She was encouraged to get up, wearing crutches and a high shoe. Locomotion, however, was attended with severe pain, so much so that she soon gave up any further attempts at walking. She lost a great deal of sleep, due to continuous pain and uneasiness about her right hip and thigh. She lost weight and appetite, and considered herself doomed to spend the remainder of her days in bed.

She was first seen April 10th, 1906, thirteen months after the injury. Physical examination revealed an emaciated woman of advanced years, heart and lungs normal, urine normal, arteries not showing any sclerotic change; her left thigh adducted twenty degrees, flexed ten degrees, and externally rotated. Marked atrophy about the left gluteal region, one and one-half inch atrophy of thigh, three-quarters inch atrophy of calf. Trochanter major prominent and situated two inches above Nelaton's line. Motion in the left hip caused extreme pain and was guarded by

muscular spasm. A radiograph revealed an ununited fracture of the femoral neck.

It was decided to operate upon the joint, and to adopt, after the region was exposed, the best method for securing stability at the hip, having in mind the use of a wire nail or the employment of silver wire to secure apposition of bone fragments; in case these methods did not seem advisable, to excise the femoral head.



Case II.—Illustrating range of motion and stability obtained in the joint formed after excision of the head and neck of the left femur.

Operation.—April 12th, 1906. A vertical incision six inches long was made over the region of the great trochanter. The trochanter being exposed, the muscular attachments and periosteum were elevated and the joint capsule opened by an incision along its anterior surface. Free

access to the hip joint being thus obtained, an examination of the region of fracture showed that the neck had been largely absorbed, leaving a ragged edge along its femoral extremity, and the same condition at the base of the articular surface of the head. The head was freely movable in the joint cavity. So little of the neck remained that freshening of the bone surfaces did not seem advisable. In consequence, the head was seized with bone-forceps, the ligamentum teres was divided and it was removed. The upper extremity of the femur was then rounded off subperiosteally, so as to produce a smooth, rounded surface. The thigh was strongly abducted, bringing the upper end of the femur into close contact with the acetabular surface. The joint capsule was firmly sutured with chromicized gut. The periosteum was united in the same



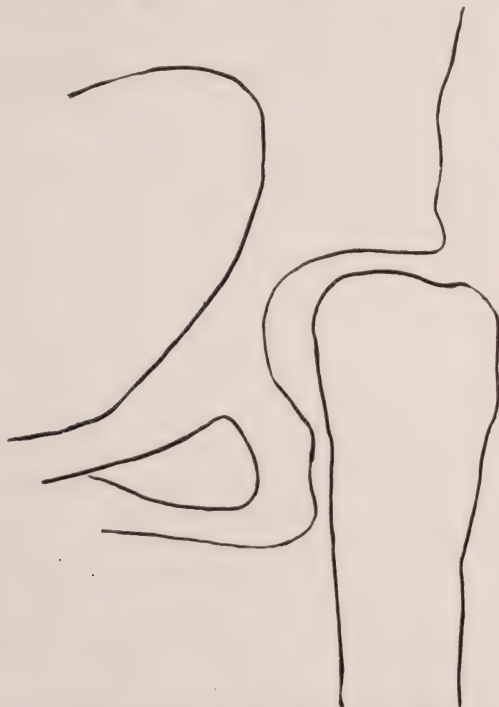
Case II.—Skiagram tracing showing ununited fracture of the left femoral neck. Before operation.

manner, and the wound was closed with interrupted sutures. A plaster-of-Paris spica bandage was applied, running from the toes to the umbilicus, holding the thigh in fifty degrees abduction and slight internal rotation.

The subsequent history was uneventful. The wound united by first intention. Very soon after operation the patient could be handled without eliciting the severe pain from which she formerly suffered. At the end of six weeks the plaster-of-Paris dressing was removed, and she was got up with crutches and encouraged to bear slight weight on her affected hip. July 10th, 1906, she left the hospital, being able to walk comfortably with the aid of one crutch and wearing a shoe elevation on the left side.

May 1st, 1907, patient is walking about comfortably, without sup-

port. She carries a cane for added sense of security, but does not consider it necessary. She is able to go up and down stairs, to attend to most of her duties without inconvenience. Examination reveals a thigh and calf only slightly atrophied; one and three-quarters inches actual shortening; a range of motion in the hip-joint closely approximating the normal. Stability of gait and standing. She wears a shoe with a heel elevated three-quarters of an inch on the left side. This she finds prac-



Case II.—Skiagram tracing showing result after operation.

tically obliterates her limp. Her general health has greatly improved, and she has gained considerable weight.

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THE HISTORY OF THE HOUSE; THE STRUGGLE FOR
FRESH AIR AND LIGHT.

(Concluded.)

By GEORGE M. GOULD, M. D., of Philadelphia.

So long as the family living room and the ox-house remained one hall, the men slept sometimes over the cattle; if there were two rows the men slept on one side, and the women on the other. When there was no hayloft, men and women slept on the floor of the hall, and, of course, immorality was encouraged.

We spend one-third of our lives abed, and yet few take sufficient thought of the history of the provision of wise bedding. What we call a bed was unknown to our ancestors. By our term bed we mean a bedstead. We still admit the power of history in the term "feather-bed," but the feather-bed introduced into England from France in the 14th century is today almost obsolete. What we call a mattress, our forefathers called a bed. The frame work, raised from the floor, upon which we now place the mattress and bedding, was unknown to the common people of the time of Shakespeare and Chaucer. The bedstead is not used by the refined and cleanly Japanese people. The English mattresses or beds were often expensive and elaborate, with the richer classes, covered with rich stuffs and quilted. Pillows and bolsters were also of the same materials. This is shown in their careful mention in the wills of Shakespeare, and even in those of nobles and kings. In all primitive times, even with the rich, and down to later centuries with the poor, the bedding was made of dried rushes, ferns, heath, hay, straw, leaves, boughs, etc., laid upon the floor next the walls of the hall. Writing in 1678, Aubrey says that in English houses, "when night came, straw, dried rushes, heath, or dried ferns, were spread upon the floor; and those unprovided with beds or couches laid themselves down each under the bench or table upon or at which he or she sat." The more comfortable (but always removable) mattress, or feather-bed, etc., was a step in advance. The development of the bedstead is a long story and a most interesting one. I regret that I can only epitomize it here. Cleopatra had an ornate bed and bedstead. The richer Greeks and Romans had narrow or single couches, their *triclinium*, or dining-bed, used about the dining table in the day, and as sleeping couches at night. As civilization crept northward and riches began to produce comforts and prides, people grew tired of sleeping upon the floor, upon straw, or even upon mattresses. In the 16th century ox-houses there were beds, blankets, sheets, mattresses, pillows, etc., but no bedsteads. The big family chests for linens and more precious holdings were used as a sort of bed at night, and possibly this gradually developed into a sort of bedstead or raised basis for the bedstead. The "bedstock," a movable structure, followed; a later stage was what we now call a "bunk," the bedstead built into the

room like a steamship berth. Then followed the enlargement of a part of the room as a bedstead, a sort of room within a room. The size of the bedstead was increased to a "double bed," and soon the exigencies of cold and space, and the natural desire to raise the bed above the dirty floor, brought about the bedstead as we know it, for the whole family. And not only for the family, but for the guests and strangers. As riches grew there were three bedsteads, the so-called "Trinity," that for the lord and his immediate family; that for the closer attendants, and lastly that for the lower servants. The great bed of Ware, now at Rye House, Broxbourne, Herts, was a monster, and monstrous. For a time the cult of the bedstead was fashionable, and great sums were spent upon its construction, furnishings and ornamentations. Two causes operated to form the custom of having curtains about the bed, the protection from cold draughts, and the desire for privacy. The state bed of George IV., designed by Heppelwaite, shows the extreme, and our American colonial four-poster was a better bad. It is remarkable that the growth in manners and morals so long permitted the use of one bed by several persons. We have today reduced the number to two, and our "double bed" still lingers as a barbaric relic of our barbaric origin. The history of the bed is a sad one. The Orientals, and especially the Japanese, solve the problem much better than our occidental civilization. Until metal might replace all wood in the bedstead, our ancestors, had they kept their floors clean, should have slept on mattresses, rugs, etc., placed on the floor. In China millions of people today walk about their huts on little islands of dry ground between which flow the canals of slops and waste water. Our Teutonic and English ancestors were almost as dirty as regards the disposal of waste and the filthiness of their floors. Only the Japanese learned to keep their floors and beds clean. One may suspect that the nomadism and tent-dwelling of the Orientals, with their constant moving about, was largely due to the necessity of escaping from bedbugs and the accumulation of filth. The curse of all Anglo-Saxon bedsteads for at least the last 500 or 1000 years has been the bedbug. That little animal has played a role in history that few can understand or estimate, greater, I suspect, than any king or war. Poor Mrs. Carlyle was unable to have much peace of mind or body at least when traveling in the best way in England only fifty years ago, because of this monster of Anglo-saxon filthiness. So long as wooden bedsteads were in use it was next to impossible to do away with the bedbug, even if there was much wish to extinguish him. The English matron had too little wish of the kind. The result was a gradual weeding out of sensitive persons, because of sleeplessness, and the encouragement on Darwinian principles of the existence of the stolid, thick-skinned, snoring, full-blooded sleepers, who had no nerves and plenty of blood for the parasites. The bedbug has had more to do with the formation of English character than climate and food, or any other several causes combined. The extensive draperies

and curtains of the bedstead gave further nesting places, if they were needed, for the parasites. The large beds also encouraged immorality, as all readers of medieval literature know. Only in the latter part of the last century has there been some progress in the war upon the bedbug by the plastered and separate rooms, and the single and metal bedstead. The metal single bedstead which can easily be kept clean and free from bedbugs is an important means to a better civilization. Wire spring mattresses are now made that will not "sag" under any load. They may be unhooked, rolled into a bundle, and stuck in a kettle of boiling water. How advisable such a device and such cleanliness! At the recent Sanitary Congress in Glasgow, Dr. Fyfe exposed the horrors of wool-flock, the material used by the poor for mattresses or beds. The rags and old clothes of tramps, the refuse of households and filth holes is dumped into a machine, without any cleaning or disinfection, and cut and torn to a confused mass of fibers and ordure called flock. The water in which a sample was washed was worse than Glasgow sewage,—and 78 per cent, said Dr. Buchanan, of their poor people sleep on beds filled with this dried sewage.

For a thousand or two thousand years the house of our forefathers had been, in colder weather, a dark hole illuminated only by the faint gleams of the hearth-fire of charcoal or twigs, or of the rush-lights and dip-lights which could serve only to make the darkness a little less obscure. It seems strange that life could have attained the poor dignity it had under such conditions. Cataract and blindness, "blear-eyedness" (conjunctivitis), came on early, under such circumstances. Note especially that no civilization, as we understand it, was generally possible. Reading and writing could not have developed into learning, psychical light was impossible without the physical light; it could not have come to fruition without glass windows. No discovery of the ages was of more value than cheap glass. The very word *window*, is a pathetic proof that it was the need of ventilation and not of light that begot the device. It means *wind eye*, or wind hole, its main purpose being to admit air instead of light. The loop-holes, or lowp-holes of old English barns, being narrow vertical slits, or little holes, show the same explanation. Among the Norsemen there were no such lowp-holes in the walls, but there were *louvres* or holes in the roof covered with the caul of a new-born calf. This showed the need of light rather than of ventilation. In England in the late middle ages the wall holes became "fenestralls," and were a kind of framed blinds of cloth or canvas. In the time of Henry VIII. linen was used which had been dipped in oil. Some glass had been a little used in the great houses from the time of the Romans, but it was so dear that even two or three hundred years ago the panes in smaller houses were very small and some of them were made of wood, cloth, etc., others in the same sash being of glass. In the 16th century the rich vied with each other in having large and numerous windows. But even then glass windows did not pass to the heir as part of the house but only to the

personal representatives. They were movable casements easily taken out. The smaller the window the older the house, is still a rule of judgment in English architecture. The window tax in Continental Europe, levied down to our own times, is an evidence of the sad stress of life, and the brutal necessities of government. The window tax was repealed in England in 1851. All early windows were hinged; sliding window panes are modern.

The history of civilization as related to the house may thus be summed up as consisting of four epochs: 1. That of securing protection and warmth by means of the single-roomed, windowless hall; 2. That of the creation of the chimney; 3. That of the making of glass windows; 4. That of securing ventilation; and this is the stage in which we are now living and shall live for centuries to come.

From the beginning of history the greatest obstacles to the opening up of new nations, especially in tropical and semi-tropical countries, and the spread of civilization, have been malaria and yellow fever. Malaria chiefly dictated the location upon hills of the Italian settlers, with a multitude of subsequent social customs and laws. Among savage peoples it has been a no less dominant factor, and in new countries it has crippled the energies of the people and sent millions to death, each century. Malaria has been the great ally of barbarism, the enemy of social progress, the unconquerable foe of medicine. With its quinin the profession had long waged a losing battle, but now the victory is possible to science, for it was a battle, if we had but known it, against—the mosquito!

The malarial parasite is conveyed from man to man through the agency of the mosquito, of the genus, *anopheles*. The mosquito receives into its stomach from man some blood containing the parasite, which forthwith goes through certain developmental changes, and in the end the germs make their way to the salivary gland of the mosquito, and thence get transferred to a new victim. The mosquito is not only the carrier, but also the intermediary host of the malarial parasite during an important part of its life-history. These facts have been ascertained by immensely patient work on the part of Laveran, Grassi, Celli, Ross, Manson, etc.; the steps gained by reasoning and by microscopic investigation have been confirmed by two carefully planned experiments. Five people spent the worst months of the year in a highly malarial district in Italy, taking no quinin and living out of doors except when the mosquitos feed; i. e., just before sunset and in the night. At these times they were carefully protected by wire blinds to their windows and doors, and mosquito curtains around their beds. They had no malaria. The second experiment consisted in feeding mosquitos of the *anopheles* group on patients suffering from malaria in Italy, sending the infected mosquitos home, and letting them feed on two of the heroic investigators, who forthwith had well-marked attacks of malarial fever.

In league with malaria has been its powerful and faithful neighbor, cholera, or yellow fever, more daring, dashing and suddenly killing. Since 1793 the disease has been the cause, in our country alone, of

no less than 100,000 deaths, 41,348 of which occurred in New Orleans, 10,038 in Philadelphia, and 7,759 in Memphis. Between 1853 and 1900 it caused 35,952 deaths at Havana. Since the practical application of the knowledge gained by the work of Reed and his associates the disease has been practically eradicated. And yellow fever is also due to a mosquito. To the everlasting honor of the United States, and of American medicine, the role of *stegomyia fasciata* in the transmission of yellow fever was established by American physicians, and thus the certain way made clear of ridding the world of the horrible disease. There is no hero in the world's work more deserving of honor and monuments than the noble martyr, Lazear, who allowed himself to be bitten by the infected mosquito, well knowing that his probable death would substantiate the truth upon which so many lives depended. He died of the disease twelve days after his sublime test had been made. Dr. Walter Reed, the American boy of whom we are all proud, planned and carried out the investigation which established the great truth. The profession and the nation owes him honor and the splendid monument now planned.

The relation of yellow fever and malaria to the house is evident. In most new tropical and semi-tropical countries the entire question of ill-ventilation, upon which ill-health depends, has been dictated, unconsciously of course, but not the less absolutely, by the mosquito. The aim has been to exclude the malaria, or bad air, and especially at night. About one-half of the lives of the inhabitants was spent in doors. But with the air came the deadly mosquito. Now night air is purer than day air if the mosquito is excluded, and so the poor blunderers excluded both the good air and the bad air, and lived in an air made foul by themselves. The last Baedeker ordered travelers in Italy to shut the windows at night. What all should have done, and Baedeker should have known for the last several years, was that a mosquito netting should have been used, the good air freely admitted, and the bad air blown out of the sleeping rooms. How slow we are to recognize the problem and face the truth is illustrated by our recent experience in Panama. After a ludicrously false and expensive start there, our government has at last recognized that housing and sanitation are the primal necessities. We can not dig the canal with dead men.

Perhaps the work of the common housefly has been as death-dealing in propagating disease, and *musca domestica* is everywhere, North and South. In January and February of 1905 there were a quarter of a million deaths in India from plague, and it is possible that the flea is the carrier of the germs of this disease just as the mosquito is of malaria and yellow fever. The bedbug is said to be an American invention, but all Oriental nations are tormented by the flea. Even the Japanese mats are filled with them. A commission of eminent scientific men is investigating this problem.

In all northern nations the struggle for warmth, and the expense of heating houses, brought about the same ill-ventilation as did the mosquito in the more southern climes. The vast majority of houses

in Europe and America are stench-holes and breeding places of disease because of the foul air of badly ventilated rooms.

The two causes combined have thus brought about the century-long habit of badly ventilated houses in the entire civilized world. The better class of householders, by means of attention and wealth, have been able to secure good ventilation and cleanliness through a hundred devices and by the waste of much heat. With all the devices that architects and engineers have made, the heating and ventilation of our homes is too expensive, too wasteful and too blundering. One of the greatest benefactors of mankind will be he who will enable a poor family to heat its house and at the same time supply it with pure air at one-tenth of the expense now demanded. It can be done, and must be done.

For what does ill-ventilation mean? It means a hundred minor



FIG. 34.—The "Home" of a million children.

diseases and types of ill-health encouraged, and the consequent preparation of the soil for the terminal diseases which invite Death himself. But more than all else it means the direct production of those diseases of the lungs which cause almost one-third of all deaths. Bad ventilation means pneumonia and consumption. As to pneumonia it has in late years been increasing so fast and becoming so deadly that in many cities the death-rate is greater from it than from consumption. But what is the ultimate cause of pneumonia? The late Commissioner of Health of Chicago truly says that it is "a disease of modern architecture," i. e., of ill-ventilation and filth. One million people die in the world every year from tuberculosis, or about 3000 every day. Ten million people in the United States, now living, will die of the disease. Every third or fourth adult now dies of consumption, and as a whole about every seventh death is caused by it.

In coughing the consumptive emits several hundred million bacilli every 24 hours. It has been said that 98 per cent of people have some tuberculosis. And all these deaths are due to the house, its bad ventilation, and the over-crowding, etc., which goes with it.

Cold, darkness and filth—these are therefore ancient enemies of our life and happiness. The struggle of ages has been against cold, and to secure an air-tight house. By means of plastering and glass windows it was at last secured; and also the light necessary to banish the more evident kinds of filth. But tragedy ran through it all because it was not seen that air may be really the filthiest and the most dangerous of all filthy things. In that blunder is our civilization now caught, and the great duty of physicians and philanthropists generally is to undo the terrible mistake. In the entire history of the past the greatest and best educational influence in the lives of the young was the home. But in the great city there are no homes. The tenement and the apartment houses can not be called homes in any true sense of the word. Next to the home in molding the child's mind were the playgrounds, the garden, orchard, fields and woods, to which the boys and girls could fly. All this for the child living in great cities is also gone. The new education, to some extent and in some poor ways, is seeking to bring back to the child these lost most valuable things. The city kills the home.

In New York City there are about 350,000 people living in 40,000 tenements without windows opening to the outer air. The results are shown in the statistics of death and in the wretched people. In Philadelphia, the city of homes, there is scarcely a windowless room, and there are about 300,000 separate dwellings. But we dare not forget that however far away we allow indecent living, our filthy sin will be punished by disease. Any one of us may be, and all of us together, will be punished for the acts of a diseased sinner in Butler, Pa., or in Ithaca, N. Y. Preventive work is a state affair and can be undertaken on a large scale only by municipal and state authorities. Scattered families may know enough to sleep with windows open, but a window opening on a foul air-shaft, or into another close and dark room, is still a thousand miles from the ideal. The "spit-cup," the disinfectants, the paper napkins and bags, which are burned up, are within reach of the thousands; but they will avail little when the whole building is rotten and reeking with infection. For wide streets, sanitary houses, and systematic disinfection, we must look to boards of health, tenement commissions, city councils and legislatures. Each of us, therefore, is responsible for the sorry but bettering condition of things in New York City.

In the famous "lung-block," the uncleaned walls and floors were the best places for holding the germs of tuberculosis bred by the millions by the former dying occupants. It housed nearly 4,000 human beings, and in nine years 265 cases of tuberculosis have been reported from it. In Chicago they have a rival of the "lung-block," called "Consumption Row." One hundred and thirty-eight cases of consumption received at the Cook County Hospital in the last four

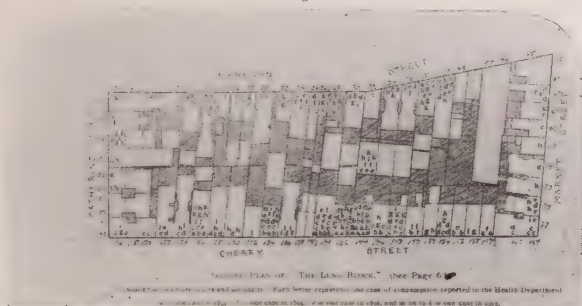


FIG. 35.—The famous "Lung Block," housing 4000; in nine years 265 cases of tuberculosis were reported from it.

years, came from this block. And yet the deaths from tuberculosis are in some small cities twice as great as in New York City. The City of



FIG. 36.—"Consumption Row," from it 138 cases of consumption were sent to Cook County Hospital in four years.

Philadelphia has much to be proud of, and much to be ashamed of, but if it is in politics "corrupt and contented," its people, of all in the world, are



FIG. 37.—Tenement house built by Henry Phipps, combining "business," charity and hygiene.

the best housed and in this way contented. It is proverbially the City of Homes. It has solved the house-problem the best of all. A typical Philadelphia, or model house, for workmen's families, rents for from \$10 to \$16 a month. That is what is wanted in every city and village of the land.

Among the most far-seeing attempts to deal with the tenement house problem is that of the establishment of tenements on a plan uniting sound business principles and charity, instituted in Washington, and especially that of Mr. Henry Phipps in New York, who has given a million dollars, the rents to go to extension of the system. The negro population, foolishly and suicidally excluded from many districts and otherwise unjustly treated, is included in Mr. Phipps' noble scheme. In this, said to be the most perfect tenement in the world, light, air and sunshine is in every one of these two, three and four-room suites.

But, of all the peoples of the world, the Japanese have solved the problem best. And that is the cause of their success, and of their



FIG. 38.—Kitchen of a three-room suite in Phipps' Tenement; rent, \$3.50 a week.

coming success in all the world's work. All success, national or personal, rests upon health; and health depends upon the house, the purity of its air, its cleanliness, physical, personal and social. A typical Japanese house has plenty of air and light; it is far cheaper even than the Philadelphia model; it is what no cheap house in civilization is,—beautiful! Three pairs of sapling tops were crossed in its original construction! The Japanese have learned how to clothe the body and keep it warm while keeping the air of their houses cool and pure. The air of all our houses and cars is too warm, and is impure. The poorest Japanese has plenty of light in his house; our poor have none. There is no filth on their floors, in their yards, or closets, while our people, even the well-to-do, are usually filthy. The Japanese have no "beds" and so they have no bedbugs and other bugs. In every farmhouse of our land the air is dead, the windows closed, the rooms dark and stuffy. And so our death rate is far higher

than that of the Japanese. They also have compulsory vaccination, while we allow the wild fools of anti-vaccination to kill thousands every year and maim thousands more. The Japanese and the Finns bathe the body daily. How is it with the rest of the world? And with all our money and "public works," we can not put pure water into our houses. At least 50,000 of our people are killed each year by unnecessary typhoid fever, and the unnecessary disease costs us about \$100,000,000 a year! Before we leave the Japanese house we should note that this first of all warlike peoples exhibits the first systematic and successful attempt, as Major Seamon has shown, to save its soldiers' lives and health and to win battles by so doing.

The housing of its citizens, especially of the more impoverished,



FIG. 39.—A typical Japanese house, cheap, clean, airy, well lit, beautiful.

should be the vital concern of every municipality, and of every good citizen. No house should be built except upon the advice of an expert in sanitation. Every architect should be held by law to have made a thorough study of the methods of modern preventive medicine. Health boards should be strengthened, paid, and well paid, then held accountable for the diseases that should have been prevented. If one could speak to the lay world he should say: "Take the medical profession into your confidence and your service. Abolish your selfish quacks. They build no hospitals, except to cheat you and your sick. They do not care for or believe in preventive medicine; the less of it the better for them. That is the distinction between a good physician and a quack. The first labors without pay to extinguish his own calling, to commit professional suicide, by preventing the diseases which kill you. The quack knows nothing and cares less for that; and yet you allow Eddyism, osteopathy, patent-medicine

drug stores, vibralogy and infinite tommyrot to crowd your physician friends out of practice, and you pay your quacks a hundred times what you pay your medical friends. What a shame! And your death rate could easily be reduced 50 per cent, and your morbidity rate 75 per cent."

As to tuberculosis, it is a curable disease, and the establishment of special sanitariums is to be encouraged. Even the roof of ordinary hospitals in the city may be used, and if that is not obtainable, life out-of-doors at home is curative. Consumption hospitals, like that at Denver, should be built where it is high and dry and sunny. Cold is no disadvantage, and even snow, as at Muskoka, makes no difference in the cure. Expensive buildings are not at all necessary, as a tent may serve the same purpose.

But hospitals, sanitariums, and even home treatments, are not the chief needs of the hour. Climate, we are learning, is not the sole or chief requisite in the treatment of tuberculosis. The segregating or traveling treatment of disease is only a makeshift. But if hospitals and sanitariums tend to become permanent ends in themselves, they can grow into evils. Sunshine and pure air are needed, but abolish smoke and dust, and sunshine and pure air may be had even in New York City. Social conditions, extreme poverty, uncleanness, bad ventilation, etc., in the home create disease. The cure is not to take the patient away and leave the bad house to reproduce new patients who are again to be taken away, and so on forever. The cure is to make every house a sanitarium and a hospital and a home combined. The aim of every true physician is to prevent disease as well as to cure it. Consumption can even be cured at home, and it can always be prevented. Sanitarium life can be carried too far. If it neglects the reform and the prevention which can be effected in the home-life, it may become an evil. All the sick can never leave home to be cured, but all the homes can be made healthful, and when so made, disease will be prevented.

We need, therefore, in every house these fundamental things: Pure air, pure water, pure sunshine, pure love. In the greatest of all historic struggles, that for the creation of the home, these things have too long and too sadly been neglected, or found impossible to secure. Even in the best of modern homes they are, in part, too frequently wanting; in the majority they are amazingly absent, and in the worst they are replaced by foul air, germ-laden water, darkness and degradation, which breed disease and increase the death-rate. Air, water, light and love are possibly the most abundant blessings of the world, and civilization—so-called—has made them the hardest things to obtain. Ours the duty, the necessity, the pleasure, to remould our domestic lives so that each shall have them in splendid profusion. As it has ever been, the family is the elemental and primal unit of society; the home its out-working, and the house its mechanism. Upon these rest the health, dignity, nay the salvation, of social existence, that dream of Christian ethics and religion, the kingdom of God on earth.

MEDICAL AND SURGICAL PROGRESS.

OESOPHAGOSCOPY, BRONCHOSCOPY AND GASTROSCOPY.

A REVIEW OF RECENT LITERATURE.

BY JESSE S. MYER, M. D.

1. THE ADVANCE, AIMS AND IMPORTANCE OF OESOPHAGOSCOPY.—Glücksman (*Berliner Klinische Wochenschrift*, June 6, 1904).
2. FURTHER REPORTS ON OESOPHAGOSCOPY.—Glücksman (*Berliner Klinische Wochenschrift*, February 19, 1906).
3. OESOPHAGEAL STENOSIS.—Rosenheim (*Deutsche Klinik*, 1905).
4. FOREIGN BODY IN THE LEFT BRONCHUS TWO YEARS; DIRECT EXTRACTION; RECOVERY.—(*Berliner Klinische Wochenschrift*, December 23, 1907).
5. GASTROSCOPY; REPORT OF ADDITIONAL CASES.—Jackson (*Journal Am. Med. Assn.*, October 26, 1907).

Only in the last five years may œsophagoscopy be said to have found its own as a diagnostic and therapeutic aid in diseases of the œsophagus. Until then it was necessary, in order to remove foreign bodies from the œsophagus, to work in the dark with long forceps, or to subject the patient to one of the most difficult and dangerous operations in surgery. The œsophagoscope has at once reduced the danger of the removal of foreign bodies from the œsophagus to a minimum.

For those thoroughly versed in the technique of œsophagoscopy, the procedure is one practically free from danger. Because of the skill required in the manipulation of the instrument, and because of the difficulties of interpretation of the findings, the œsophagoscope has not been as generally used as one might have expected. The eye is to the diagnostician the most useful of the senses. It is surprising, therefore, that the literature on œsophagoscopy and bronchoscopy during the past three years has been as meagre. Yet, through the constant efforts of a few the instrumentarium has been almost perfected and its application reduced to a science.

Kussmaul was, in all probability, the first physician to view the mucous membrane of the œsophagus in its entire length. He took advantage of the talents of a so-called "sword swallower," and introduced a hollow tube down to and through the cardia and was able to view the mucous membrane as he withdrew the tube.

Störk and McKenzie and others, in spite of persistent efforts, were unable to make practical applications of the observations of Kussmaul. Von Miculicz may be justly considered the author and inventor of the present method of intubation of the œsophagus by means of a long hollow tube armed with a mandarin. Von Miculicz introduced the tube with the mandarin in position and upon its removal was able to view the lower most portion of the œsophagus. As the tube was withdrawn he could view the mucous membrane of the œsophagus in its entire length.

Von Hacker and Rosenheim were pioneers in the application of his methods. To Rosenheim belongs the credit not only of many valuable

modifications of the instrument, but to him also belongs the credit for careful observations in the physiology and pathology of the œsophagus through the œsophagoscope. Among other things he introduced methods of local treatment, by means of astringents and anesthetics, of carcinoma of the œsophagus and by these means could often enable patients with carcinoma of the œsophagus to swallow food to the end of life.

Kraus and Gottstein contributed much toward the perfection of the methods and presented the details in a splendid work on the subject. Kelling invented a flexible tube for the examination of the œsophagus, which, however, has never succeeded in supplanting the straight one.

Killian and Von Eichen have not only contributed much to the perfection of technique and instruments for œsophagoscopy, but have taken perhaps the foremost rank in the application of the principles of the œsophagoscope to the examination of the trachea and bronchi.

Glücksman in two articles cited above gives an excellent exhibition of what may be accomplished in diagnosis by means of the œsophagoscope. He presents in both of these articles a large number of photographs of the field viewed by the œsophagoscope, showing beautifully the pictures of benign and malignant strictures of the œsophagus, diverticuli, etc.

The usefulness of the œsophagoscope depends, as does that of all of our finer methods of diagnosis, upon the operator's ability to interpret his findings. This is true of the cystoscope, ophthalmoscope, x ray, etc., and it is only through constant practice and frequent examinations of the mucous membrane of the œsophagus that one may develop this power. Glücksman demonstrates well in his articles the perfection that one may attain in the art of œsophagoscopy.

Bronchoscopy has been the natural outgrowth of œsophagoscopy, and the results which have been attained, most especially in the diagnosis and removal of foreign bodies from the bronchus, have been truly marvelous. Prior to the development of the bronchoscope, especially by Killian and his school, these were practically hopeless cases, especially if the foreign body entered the right or left bronchus. An exceedingly large number of cases have been reported in which foreign bodies have been removed from the bronchi of both children and adults, in some cases shortly after their introduction and in others even years after the introduction.

Von Schroetter, who has devised an instrument of his own, reports here the removal of a foreign body which had been in the left bronchus for two years. Cases such as this one could not only not be cured previously, but even the diagnosis was impossible, because it has been shown that foreign bodies may exist in the bronchi for years, resulting in abscess formation with all of its unpleasant symptoms, and yet the patient may not be aware of the presence of a foreign body, nor able to tell, in some cases, how and when it was introduced.

Oesophagoscopy and bronchoscopy are considered by many, who are unacquainted with them, barbarous procedures. But, those accustomed to their application use them with the same freedom that one does a proctoscope or similar instrument, and, while the introduction produces great discomfort on the part of patients because of the position which must be assumed, yet they yield to it readily where the use of the instrument is indicated and suffer no ill consequences as a result of it. The symptoms produced by obstructions of the œsophagus are so unpleasant that patients yield readily to any procedure that promises them any relief.

Rosenheim, in an admirable article quoted above, reviews the various

forms of stenosis of the œsophagus and advocates as a routine procedure in those cases, the use of the œsophagoscope. One needs but read the recital of his cases to recognize at once the great usefulness of such an instrument. Some authors advocate the sitting posture with the chest thrown forward and the head thrown back, while others still, and Rosenheim belongs to this number, advocate the lying posture with the head hanging over the edge of a table. This is entirely a matter of preference, both methods yielding good results.

In 1881, Von Miculicz examined through the instrument devised by him the interior of the stomach, and prophesied even at that time that this would become a useful method of examining the stomach.

Glücksman, in his article in 1904, considered the process an impractical one, because of the dangers to the vagi through stretching the intra-diaphragmatic portion of the œsophagus. There are those, however, who advocate today the use of the gastroscope and maintain that a considerable area of the stomach is accessible to this instrument.

Jackson is perhaps the chief promulgator of the use of the gastroscope in this country. In this article he presents a report of a number of cases in which he has applied the gastroscope successfully and presents too, an ingenious x ray picture showing the explorable area of the stomach. Through moving the head from side to side, with the gastroscope in position, it is possible to observe from one-half to three-quarters of the total mucous membrane of the stomach. While he asserts that there are many technical difficulties, yet, the method is one of great value and this should not be permitted to limit the usefulness thereof. Profound anesthesia of the patient is absolutely necessary, because of the straining and retching which would be produced by the introduction of an instrument into the stomach. Profound anesthesia and the proper position of the patient, which the author describes minutely, eliminate many of the dangers and much of the difficulty in the application of the gastroscope. He believes that "gastroscoy can bear with ease all the responsibility for all the deaths it will ever produce either by vagus reflex, perforation, hemorrhage or otherwise, etc."

The œsophagoscope and bronchoscope are, in the hands of many, invaluable instruments. In the hands of a few, the gastroscope is proving of similar value. We doubt not that the next few years will render it a most important adjunct to the diagnostic instrumentarium.

THE SERUM REACTION IN SYPHILIS.

A REVIEW OF RECENT LITERATURE.

BY CARL FISCH, M. D.

1. KLINISCHE VERWERTHUNG DER SERUM DIAGNOSIS BEI SYPHILIS.—M. Wassermann and George Meier (*Deutsch. med. Woch.*, 1907, No. 32).
2. DER GEGENWAERTIGE STAND DER SERODIAGNOSIS IN SYPHILIS.—A Wassermann (*Berl. klin. Woch.*, 1907, No. 51).
3. SYPHILITISCHE ANTIKOERPER IN DER CEREBROSPINAL FLUESSIGKEIT IN PARALYSIS.—J. Morgenroth and G. Steitz (*Virchow's Archiv.*, Vol. 188, H. 1).

4. C. LEVADITI (*Annales de l'Inst. Pasteur*, 1907, and *Compt. rend. Soc. Biol.*, 1907).
5. UEBER ANTIKOERPER BEFUNDE BEI LUES, TABES AND PARALYSIS.—Weil and Braun (*Berl. klin. Woch.*, 1907, No. 49).
6. ERWIDERUNG GEGEN WEIL UND BRAUN.—Julius Citron (*Berl. klin. Woch.*, 1907, No. 50).

These references do not represent the whole of the literature on the theory and practical application of serodiagnosis in syphilis; they were selected as guides to the rest of the publications on the subject. The immense importance of the study of Wassermann and Bruck of the so-called phenomenon of binding of complements, first discovered by Bordet for bacteria, consists in the establishment of the fact that not only bacteria as such will give rise to it, but also watery extracts made from them, containing their body substances. The complement binding or absorption occurs in the union of an antigen and an antibody, thereby causing the disappearance of the complements in active serum. The demonstration of this process is made by the combination of a mixture of antigen and antibody with a hæmolytic system. While the absence of the reacting substances allows of a full hæmolytic effect, hemolysis is prevented when both are present. This reaction is highly specific for the specific character of the bacterial extracts or antibodies investigated. It thus opens the way to determine with great certainty, the specific character of infectious diseases. The method itself is very complicated, and must be surrounded by a great number of controls to exclude sources of error. If done with regard to the latter point, the results are conclusive, as has been demonstrated for a great number of pathogenic bacteria and proteid substances. The capacity of the reaction is very great and allows of definite interpretations with very small quantities of material.

The application of this method to syphilis, proven to be an infectious disease with the characteristics of other such diseases, although the causative agent of which has not been cultivated and is not yet in reach for direct investigation biologically, promised success. The extracts of organs of active lues must contain antigens and later on antibodies. The latter can be produced by animal inoculation with luetic products.

Wassermann and Bruck very soon found a typical reaction in the serum of luetics in a number of cases. Antibodies were more frequently demonstrated than the antigen. Careful controls showed that the reaction was specific, and in obscure cases was confirmed by later developments in some of the cases. The cerebrospinal fluid was examined also, with the same result; it appeared to them that the latter material was more favorable than the serum as it often gave a positive reaction where the serum was negative. Citron has lately demonstrated that with a slight change of the method it is possible to obtain the reaction in any syphilitic serum and that it is not necessary to resort to the cerebrospinal puncture.

Control investigations by many observers have fully confirmed Wassermann's statements. He himself, together with Plaut, then took up the question of a problem, much discussed and fought about, that of the etiology of the so-called parasyphilitic processes, especially the conditions of progressive general paralysis and of tabes. While clinically the opinion has been held for a long time, and while statistics have added to this opinion to an almost convincing scale, a direct proof for this connection or causation could not be given. The objection that specific treatment does not materially influence tabes and paralysis, although in cer-

tain cases it has a beneficial and retarding effect, cannot be considered in consideration of the pathologic essential and permanent changes that have taken place when the diagnosis is made. By Wassermann's method a positive reaction is obtained in almost every case of paralysis and tabes; the percentage of the latter in this class of parasyphilitic conditions is rather greater than in the primary and secondary and early tertiary stages. The quantity of antisubstances present in them is larger than in the early periods of syphilis, due perhaps to a lasting biologic change of tissues influenced by the luetic process, a hyper-production of specific substances.

So far these remarks mark the result of the investigations of Wassermann and his co-workers and of many independent observers. The uniformity of the results is great. Certain publications have attempted to show unreliability of the method and, mainly, that its result is not absolutely specific. As far as paralysis and tabes are concerned, of course, the coincidence of the presence of a positive reaction with the disease does not logically mean a causative relation between the two. That this relation exists cannot be directly proven, although the almost regular co-existence of both factors cannot be explained as far as our knowledge goes, in a more probable form than as of a causative nature, causative meaning simply a gradual change or development of a single process in which very diverse phenomena, apparently heterogeneous in character, attract our attention, while the slow current of changes escapes it.

That the serum reaction of syphilis is one of the most important additions to our knowledge of dealing practically with a number of problematic conditions, so far obscure in character, and therefore almost unmanageable, in prevention and when developed, is at once clear. The fact is, that this reaction is, for practical purposes, the most reliable diagnostic means of interpreting otherwise unexplainable disturbances. In the majority of cases the correctness of the diagnosis is established by the further development of the disturbance. It will play a great part in the future study of clinical riddles. There is one thing to be emphasized. The complex character of the method, given by the necessity for a great number of different single determinations, all of them to be carefully carried through and calling for an absolute familiarity with work in the study of serum problems, will take it entirely out of the hands of the practitioner and limit its performance to well arranged institutes. The material used has to be under constant control and is, by the way, often difficult to procure. The liability of introducing a source of error is so great, that a perfect familiarity with and a full understanding of all of them is the condition that alone allows of a definite conclusion. The reason for some failures that were reported, and even for the assertion of seeming non-specificity of the reaction, is faulty execution or ignorance of the possible sources of mistakes. For practical purposes, when correctly performed, a positive result is definite of an existing active or latent luetic process. Negative results in clinically certain syphilitic conditions may occur. This is due to individual systemic conditions of the patient and in most of them seemingly to the effect of specific treatment (mercury), although this latter point is not proven.

A problem that does not concern the practical side of the question, which is established, is the scientific explanation of the process going on in the reaction. Of course in the beginning of all this work, the next thought was that the character of the substances acting on each other was that of the well known immunity substances, like amboceptors and

receptors. In the beginning, even the whole reaction was brought in connection with the process of præcipitin reaction.

The latter, first maintained by Bordet, later by Moreschi, could be excluded. The question, however, is: Are the two reacting substances, the antigen and the antibody, directly the product of the spirochæte pallida? We have, with the impossibility of obtaining pure cultures, no means to determine this point; we only know that the investigation with syphilitic material, leads to the same results, as in that with other well-known and cultivatable microorganisms. The doubts of this character of the substances discussed arose by work of Levaditi and others. The extracts of the liver of a syphilitic fetus are the material of predilection used in the controls of the reaction. Levaditi found that an extract from a normal liver also resulted in the stopping of hæmolysis, although only to a slight degree. There are other facts known—that antigen-like bodies occur without syphilis being present. This has suggested to Wassermann and others that the specific substance is not a product of the spirochæte, but some tissue ingredient that specifically is acted upon by the virus, and by this action is stimulated to multiplication and increase in quantity, or perhaps only by the production of a higher degree of affinity to the virus. Weil and Braun have in special investigations of this question come to the conclusion that the reaction is not that of an amboceptor and receptor, or of an antigen and antibody, but some physical or chemical process. Their method varied greatly from that of Wassermann, and, as the latter has shown, cannot be accepted as giving conclusive results. Certainty of decision on this point will be impossible until we are in possession of pure cultures of the spirochæte pallida. The uncertainty about the real nature of the reacting substances has no influence on the practical reliability that is recognized as conclusive. The theoretic side of this problem will be further studied and investigated, if not for syphilis, for other cultivable microorganisms. As the reaction is identical for all of them, an explanation given for one will give the explanation for all.

THE TREATMENT OF PSORIASIS.

A REVIEW OF RECENT LITERATURE.

By J. J. HOUWINK, M. D.

1. THE TREATMENT OF PSORIASIS, WITH A STUDY OF 500 CASES OF THE DISEASE, OBSERVED IN PRIVATE PRACTICE.—L. Duncan Bulkley (*Journ. A. M. A.*, November 17, 1906).
2. THE VALUE OF AN ABSOLUTELY VEGETARIAN DIET IN PSORIASIS.—L. Duncan Bulkley (*Journ. A. M. A.*, February 22, 1908).
3. NEUERE ERFAHRUNGEN UND ANSCHAUUNGEN UEBER PSORIASIS.—P. G. Unna (*Medizin. Klinik*, 1906, No. 39-40).
4. THERAPIE DER PSORIASIS.—E. von Düring (*Deutsche Medicinische Wochenschrift*, 1905, No. 51).
5. THE TREATMENT OF PSORIASIS BY THE GENERAL PRACTITIONER.—Dreuw (*Journ. A. M. A.*, June 19, 1905).
6. THE TREATMENT OF PSORIASIS.—F. H. Barendt, Liverpool, 1907. Monograph.
7. APERCU SUR LE TRAITEMENT DES DIVERSES FORMES DE PSORIASIS.—L. Brocq (*Le Progres Medical*, 14 Decembre, 1907).

Psoriasis has always been, and still is, considered one of the most obstinate diseases of the skin. In fact, the general belief is, even today, that the disease is incurable. All agree that it is often possible to remove the lesions, under proper and energetic local treatment, but the tendency to a recurrence is so strong that the disease is regarded as incurable, even by most dermatologists. It is therefore encouraging to notice that during the last few years some noted dermatologists in Europe and in this country have come to another view, and, reasoning from different standpoints, now consider the disease as curable. However, all of them acknowledge that the treatment has to be kept up for a long time.

The reason that most cases of psoriasis never get well is because physicians and patients practically always discontinue the treatment as soon as the eruption has disappeared. The patients fall into their old habits and mode of life instead of keeping up the necessary hygienic, dietetic and medicinal treatment for a long time in order to accomplish a permanent cure.

The two papers in which the standpoints mentioned above are most clearly defined, are those of Bulkley (1 and 2) and of Unna (3). Bulkley accepts a micro-coecic agent as the direct exciting cause of the separate lesions; not a specific microörganism, but probably one or more of the organisms always present in the skin. He bases his opinion on the clinical appearance and mode of development and extension of the lesions; also on the parasiticide action of all the remedies used in the external treatment of the disease. He does not believe in a hereditary tendency directly, but in his opinion a hereditary weakness of the tissue may be present, rendering the skin more susceptible to the exciting causes of the eruption. Doubtless a faulty metabolism is at the bottom of every case of psoriasis, making the soil fit for the exciting cause. It is therefore necessary to study the patient carefully and to bring his constitutional condition up to the normal by dietary, hygienic and medicinal treatment. No specific remedy exists. Sometimes antisyphilitic treatment is of benefit; in other cases arsenic or nitric acid internally; then again iron, cod liver oil or alkalies have a favorable effect, all depending upon the constitutional condition of the patient. In all cases alcohol and other stimulants, meat and sweets, spices and highly seasoned food, are injurious and a vegetarian diet, if possible absolutely, is of the greatest benefit to the patient. Bulkley mentions several cases in which the eruption disappeared under the proper internal treatment and a vegetarian diet. However, external treatment is of great value also and should be used constantly from the start, in combination with the dietary and internal treatment. Treating the patient in this way for at least two years, we may have good hope of curing the disease, especially if the patient does not fall into his old, injurious mode of life.

Unna criticises the general opinion that psoriasis is a disease, taking an isolated place in the system of skin diseases, far from eczema. The numerous forms of the eruption, the localization, the subjective symptoms, the association of psoriasis and typical eczema often met with, the fact, that the remedies used in psoriasis are also of value in eczema, convinced him that psoriasis belongs to the eczematous eruptions and is simply the extreme form of dry eczema. The histological changes in psoriasis and eczema are practically the same and therefore he puts psoriasis as well as eczema in the class of parasitic affections of the epidermis. He does not consider the disease as incurable. The treatment, however, must be radical and carried out for a long time with

antiseptic remedies. It is not only necessary to make the visible eruption disappear, as is usually done, but after that radical treatment of the locations of predilection must be continued for a long time. In these locations—scalp, elbows and forearms, knees and legs—nests of the causative agent are left and deep seated. From here fresh crops of eruptions take their start. A regional treatment of these places is therefore indicated after the ordinary treatment and must be carried out systematically for a long time after the visible eruption has disappeared. In this way psoriasis is curable; it only requires the coöperation and entire energy of the physician, the patient and his surroundings. Diet and internal treatment are not considered to be of any importance. Arsenic often has a good effect, but never cures a case and should not be considered as a specific. To get rid of the eruption, Unna advises the use of chrysarobin and pyrogallic acid in ointments; and for the regional treatment Dreuw's ointment and Unna's peeling collodion.

In Von Düring's paper (+) great stress is laid upon hydrotherapy, sweat cure and tar applications. He does not consider internal treatment as of any value, but advocates, in acute cases, a milk diet as being of great benefit and in all cases a limited diet without stimulants should be followed. He treats his patients by producing profuse perspiration in a hot air cabinet for about 10 to 15 minutes. The patient is then brought under a warm douche for one minute, followed by a cold one for a few seconds. After drying and rubbing the patient is wrapped in a woolen blanket and put to bed. Another treatment carried out by von Düring and from which he has observed very good results, is the tar-bath. The patient is rubbed with liquid tar and put in a hot bath for 15 minutes.

The ointment of Dreuw (5), which has been used successfully everywhere, since he published the formula, consists of:

Acid. salicyl.	10.
Chrysarobin	20.
Ol. rusci (birch tar)	20.
Sapo viridis.....	25.
Vaselin	25.

The good results obtained from the use of this ointment is due to the happy combination of the different ingredients, as it contains keratolytic, reducing, macerating and antipsoriatic properties of great strength. The treatment with this ointment is carried out as follows: The ointment is applied daily for 4 or 6 days by the aid of a stiff brush to the affected parts and after it has dried somewhat, some simple dusting powder is applied over it. On the fifth or seventh day the patient starts taking a hot bath daily, rubbing in vaselin after the bath. The psoriatic patches disappear, as a rule, soon after the first cyclus. If not, the same course is repeated. The chrysarobin irritation, which handicaps us in our treatment of psoriasis with other chrysarobin ointments to such a great extent, does hardly any damage to the normal skin when using Dreuw's ointment. The diffuse staining of the skin is also limited to the area of application. Very favorable reports upon the use of this ointment have been made by Unna and the late Lassar.

Barendt (6) divides the treatment of psoriasis into three stages: the preliminary stage consists in removing the scales, which is most easily accomplished by the use of *sapo viridis* rubbed in "ointment fashion." The next morning a hot bath is taken and the scales removed by scrubbing.

For parts covered with hair the *spiritus saponis alkalinus* is the most suitable application, while, if the scales are thick and greasy, ether may

be added. The preparation is well rubbed in, left over night and next morning followed up by a vigorous shampoo. In the remedial stage chrysarobin, notwithstanding its drawbacks, is the most efficacious remedy, using it as a 4 per cent ointment, rubbed in twice daily and followed up by a dusting powder. As soon as the eruption turns white and the surrounding skin red, he intermits the chrysarobin and uses ung. hydrarg. ammoniati, while this latter ointment is used on scalp and exposed parts exclusively. In obstinate cases 2 to 4 per cent salicylic acid is added to the chrysarobin ointment. To prevent new crops of eruption—prophylactic stage—the writer treats the sites of predilection—mentioned above—for a long time with milder ointments. Arsenic should be given during attacks and for a long time after. Exercise should be taken freely, as psoriatics as a rule do not perspire sufficiently. He thinks it of benefit to keep the skin slightly greasy by using olive oil externally after bath.

Brocq (7) uses in beginning psoriasis with pinhead sized lesions—psoriasis punctata—soothing applications like ichthyol, ichthyol zinc paste, etc., and later, while watching the inflammatory condition of the eruption, stronger ones: tar, pyrogallic acid and chrysarobin. He says psoriasis acts like scabies, where it is impossible to see all the lesions and it is therefore not only necessary to treat the visible eruption, but to treat the entire healthy looking skin as well. After the eruption has disappeared, Brocq continues the same treatment still for 4 to 6 weeks, and afterwards, for a year, the patient has to use milder applications twice a week. Vegetable diet and no stimulants are also thought by him to be of great benefit. The preparations best adapted for treatment of the scalp and exposed parts are, in the opinion of all the writers, mercury and pyrogallic acid, while the great benefit from the x ray in localized obstinate patches is acknowledged by every one of them.

In the opinion of the reviewer, Unna's view, that psoriasis is simply the most extreme form of dry eczema, is right, but he does not agree with Unna that internal treatment is of very little and diet of no value. Not only in psoriasis, but in eczema as well, he has noticed time and time again the great benefit of internal treatment and dietetic and hygienic measures, and he fully appreciates the view of Bulkley, that the soil is of the greatest importance in the development of psoriasis. What Bulkley has said in this regard as to psoriasis, is true too in eczema. Treating the whole patient to get the tissues in as normal a condition as possible and treating the eruption to get rid of the causative agent, must go hand in hand to get the best results as to a permanent cure. These principles have to be at the bottom of any plan of treatment.

THE CALMETTE OPHTHALMO-REACTION IN THE DIAGNOSIS OF TUBERCULOUS AFFECTIONS OF THE EYE.

A REVIEW OF RECENT LITERATURE.

BY JOHN GREEN, JR., M. D.

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1. CALMETTE (*La Presse Medicale*, June 19, 1907).
 2. STOCK (*V. Graefe's Arch. f. Ophthalm.*, Bd., 66, June 18, 1907).
 3. VON PIRQUET (*Deutsch. med. Woch.*, May 23, 30, 1907).

4. PAINBLAN (*L'Ophthalm. Provinciale*, August, 1907).
5. BRUNETIERE (*Ibid.*).
6. BRUNETIERE (*Ibid.* September, 1907).
7. AUBARET AND LAFON (*Gaz. Hebdom. des Sciences Med. de Bordeaux*, August 4, 1907).
8. STEPHENSON (*Brit. Med. Journal*, October 19, 1907).
9. STEPHENSON (*Ophthalmoscope*, December, 1907).
10. NANCE AND SWIFT (*J. of Ophth. and Oto-Laryng.*, February, 1908).
11. DE LAPERSONNE (*La Presse Medicale*, December, 1907).
12. WIENS AND GUNTHER (*Muench. med. Woch.*, December 24, 1907).
13. BARBIER AND RENON (*Abstr. N. Y. Med. Jour.*, Feb. 1, 1908).
14. KALT (*Soc. d'Ophthalm. de Paris*, October 8, 1907).
15. TROUSSEAU (*Jour. de Med. et de Chirurgie*, January 10, 1908).

Since the announcement by Calmette (1) that tuberculosis in any form could be diagnosticated by the simple means of instilling a drop of a 1 per cent aqueous solution of dried tuberculin into the conjunctival sack, many observers have applied the test in cases now aggregating some thousands. For the information of those who may be unfamiliar with the "reaction," it may be stated that in tuberculous individuals, in from three to six hours after the tuberculin has been used, the semilunar fold and caruncle become reddened and the eyeball appears congested. The condition rapidly develops into an acute catarrhal conjunctivitis. The reaction attains its height in from 6 to 10 hours and disappears after 18 to 36 hours. The patient's general state remains unaffected.

The interest of ophthalmologists in this test has been twofold; first in the determination, description and classification of the ocular signs typical of the reaction, and second, its possible value in determining the true nature of many obscure ocular and intraocular affections, hitherto vaguely ascribed to syphilis, rheumatism, gout, etc. In this connection Stock's (2) paper is of interest. He found that in endogenous experimental tuberculosis there is a remarkable absence of anatomical characteristics. On the clinical side, he injected 76 patients suffering from chronic uveitis with "alttuberculin," and got a positive general reaction in 45, a local reaction in 7 cases. He believes that the presence of pale greyish hardly visible nodules in the iris near the minor circle, without much injection, points almost indubitably to tuberculosis.

It is obvious that the test is inapplicable in the presence of bilateral inflammations of the anterior segment such as conjunctivitis, keratitis, iritis, etc., as one eye must be wholly free from signs of external inflammation prior to the instillation. In such a contingency the "cuti-reaction" of V. Pirquet (3) would undoubtedly be preferable.

In two patients affected with tuberculosis of the conjunctiva Painblan (4) obtained positive results. In three eye cases suspected of tuberculosis origin—kerato-iritis, interstitial keratitis and exudative choroiditis—Brunetiere (5) found no reaction. In a subsequent communication, (6) he states his belief to the diagnostic value of the reaction. Aubaret and Lafon (7) employed the method in a series of 17 cases including tubercle of the choroid, phlyctenular disease, episcleritis, interstitial keratitis, lacrimal affections and optic papillitis in cerebral tumor. They are convinced that the reaction is of positive value in ophthalmology. Stephenson (8, 9) presents the largest series yet reported (between 40 and 50), including scleritis, episcleritis, lacrimal affections, iridocyclitis, iritis, choroiditis

and others. He is "under the impression that in the Calmette reaction we have been endowed with a most valuable means of recognizing tubercle."

Nance and Swift (10) have employed the method in 22 instances. Their cases include phlyctenular conjunctivitis and keratitis, sclerotizing keratitis, scleritis, choroiditis, interstitial keratitis, chronic conjunctivitis and papillitis. Positive reactions were obtained in 14 cases, negative in 8. These authors emphasize the propriety of a searching examination of the conjunctiva, cornea and fundus oculi and a determination of the vision prior to the instillation.

In his original paper Calmette (1) insisted upon the entire harmlessness of the method, declaring that the reaction invariably passed through its various phases rapidly and without sequelæ. Observations by others (not ophthalmologists, however,) seemed to bear out this contention. That the method may occasionally be productive of harm is the opinion of such well-known men as de Lapersonne, (11) Wiens and Gunther, (12) Barbier and Renon (13) and Kalt. (15) This aspect of the question has been critically discussed by Trousseau, (15) a translation of whose paper appears in the March issue of the *INTERSTATE*. (See *Obiter Dicta* from *Foreign Journals*.)

GENITO-URINARY SURGERY.

IN CHARGE OF

H. McC. JOHNSON, M. D.

UNILATERAL RENAL HEMATURIA DUE TO PYELITIS CYSTICA.—Haynes (*Annals of Surg.*, Mar., 1908).—The author reports a case of renal hematuria in which it occurred periodically for several years, nothing being discovered to account for it. Operation showed the kidney to be apparently normal, but on microscopical examination of it evidence of a long-standing pyelitis was found. At many points a condition resembling the early stages of pyelitis cystica was discovered. The possible sources of hemorrhage in this case were, first, the chronic venous congestion of the whole kidney, and, second, the superficial chronic inflammation of the pelvic mucosa, which had produced many new but poorly formed vessels. The exact points of origin of the hemorrhage were not discovered. Nephrectomy was performed and recovery followed. After a review of the condition, the author concludes in regard to treatment as follows: if the conditions in the tissues surrounding the kidney, if the state of the capsule or the kidney itself does not afford a fair inference as to the cause of the hematuria; if the symptoms of hematuria, pain and disability, have been steadily increasing under persistent medical treatment; if the other kidney has been proved to be sound; and if the patient and surgeon are not prepared to undergo a possible secondary nephrectomy, the kidney should be removed, because the lesion in such obscure conditions may be chronic pyelitis or a true form of angio-neurosis which are amenable only to the more radical operations.

OBSTRUCTION OF THE INTERNAL URINARY MEATUS BY FOLDS OF MUCOSA.—Jones (*Annals of Surg.*, Feb., 1908).—Several very interesting cases are reported by the author, in two of which a prostatic enlargement was thought to be causing the urinary obstruction, until operation revealed the true state of affairs. In the first case reported, a very

thin collar of tissue was found arising about the internal urinary meatus, in the shape of a horseshoe, with the opening of the shoe toward the pubes. This tissue had sufficient rigidity to cause it to stand erect about the outlet of the bladder; it yielded, however, to the slightest pressure, and collapsed into the opening, closing it like a valve. In the second case, a pedunculated tumor, the size of a very large pea, sprang from the bladder wall, just at the posterior margin of the internal urinary meatus. It dropped into and closed the opening like a ball-valve. Microscopic examination showed this tumor to be of prostatic origin. In two other cases, the obstruction proved to be a fringe of mucous membrane that grew all about the meatus, and dropped into and closed the urinary passage, but offered no resistance to the passage of the catheter. In still another case, the obstruction was due to a band, or fold, immediately posterior to the internal meatus, and encroaching upon it.

THE PRESENT STATUS—TWO YEARS AFTER THE ORIGINAL REPORT OF EIGHTEEN MALE CASES OF RÖNTGEN RAY STERILITY.—Brown and Osgood (*Am. Jour. of Urol.*, Oct., 1907).—From the study of these cases, the studies of others and their own experiments, the authors believe that the extent of injury from the Röntgen ray is directly proportionate to the amount of destruction of spermatogenetic cells in the tubules of the testis. The spermatogenetic cells of the tubules showed degenerative changes after exposure, in animals, though no estimate can be given as to the amount of exposure necessary to bring about this condition in man. There seems to be no direct relation between the cutaneous effects and those in organs beneath the skin. That some regeneration of the spermatogenetic cells may take place after a time seems evident from the authors' present report. The eighteen cases reported two years ago represented fifteen cases in whom no spermatozoa could be demonstrated, and three cases whose seminal fluid showed a very few motionless spermatozoa. Two of the fifteen cases have not been examined since. Of the other thirteen cases, nine are shown now to be subjects of azoospermia; two have recently shown a large number of normal-appearing spermatozoa; two others have improved so far as to now show a few spermatozoa after diligent search. The three cases of oligospermia of the 1905 report are apparently normal now.

A REPORT OF ONE HUNDRED CONSECUTIVE PERINEAL PROSTATECTOMIES WITHOUT A DEATH.—Young (*Jour. of Am. Med. Assn.*, Feb. 15, 1908).—This report is of great interest, in showing what may be done toward reducing the mortality of this operation in the hands of skillful surgeons. Young's practice has been to operate on almost every case, regardless of the gravity of complications, if the patient did not improve on preliminary treatment. He states, though, that none of these cases were in quite so bad shape as others previously operated upon, in which there was some mortality. In ten of the cases reported, vesical calculi were present with severe vesical infection. Three had pyonephrosis. Eight patients were very sick when the operation was performed, and two had apoplexy. In six cases the bladder was greatly distended showing over one thousand c. c. residual urine. Many had slight symptoms of poor renal function, and six were markedly uremic. Other complications which were present in these cases were cardiac murmurs of marked degree, pulmonary emphysema, and marked pulmonary tuberculosis of both lungs. The operation was performed within a few days after seeing the patient in nearly all cases. The author believes that preliminary treatment is rarely helpful. Among the cases there has not

been a single recto-urethral fistula, and only seven cases of epididymitis. The perineal fistulas have healed generally within two weeks and several as early as seven or eight days, three still persist. All of these are minute, pin-point openings, through which a drop or two of urine escapes only during urination. Incontinence of urine is present in but two cases, in both of which the patients are suffering from locomotor ataxia. A slight weakness of the sphincter has persisted for a time in several cases, but has usually completely disappeared within two or three months. Generally a necessity of voiding quickly when the desire to urinate comes on, is the chief complaint. As to the preservation of the sexual powers, a careful examination of 200 specimens removed has shown no evidence of the presence of an ejaculatory duct in more than two or three cases, and in all of these the operator was conscious of cutting too close to the well known location of these ducts. In five cases (in which erections had been absent for a long period before operation, there was complete restoration of the sexual powers after removal of the prostatic lobe. This was probably due to the removal of pressure upon the veru montanum and ejaculatory ducts. Prostatectomy is no longer to be considered an operation of necessity, a last resort. The fact that it can be performed with practically no danger and with perfect functional results, should lead to its early adoption, not only in cases of hypertrophy but in those of severe chronic inflammation and cancer of the prostate.

THE TUB-BATH TREATMENT OF CYSTITIS.—Hunner (*Jour. of Am. Med. Assn.*, Dec. 21, 1907).—The author reports excellent results in the treatment of cystitis in women by continuous drainage with the patient in the tub-bath. It is applicable for the patient with artificial vesico vaginal fistula made for the purpose of drainage, as well as for the unfortunate case of accidental or traumatic fistula. It makes the patient comfortable. These patients often enter the hospital in an anemic and nervous state, due to the suffering caused by the severe inflammatory condition of the pudendal region and thighs and the consequent loss of sleep, disturbances of digestion and drain on the nervous system. To place such a patient in a tub-bath is one of the most satisfactory measures in the realm of therapeutics. It saves an incalculable amount of labor. If such a patient is bed-ridden, the application of lotions and salves and the changing of pads, gowns and bedding in the effort to keep the patient clean, requires the constant attention of a nurse. It is a most valuable adjunct in the treatment of intractable cystitis with or without the formation of a fistula. The force of the stream entering the bladder is regulated by the height of the supply tank, and the patient can modify the stream at any time by changing the caliber of the supply tubing by the use of an artery-clamp. The inflow naturally has to be regulated according to the sensitiveness of the bladder, and to suit the freedom of the outflow, whether it be through a second tube in the urethra or through a suprapubic or vaginal fistula. The author describes his arrangement of the tub for the application of his method of treatment.

THE AFTER-TREATMENT OF CASES OF SUPRAPUBIC CYSTOTOMY: A NEW AND ECONOMICAL METHOD.—Irving (*The Lancet*, Dec. 21, 1907).—The author describes an apparatus for suprapubic drainage, which does away with the constant changing of dressings and its consequent discomforts, while it allows the patient more freedom in moving about in bed. The apparatus is described as follows: The principle is the simple one of a celluloid cap kept in place over the suprapubic wound by elastic press-

ure and possessing outlet tubes for the escape of urine. The celluloid portion is shaped like a straw hat, having a small rim slightly curved with an upward concavity and a crown that can be removed like a lid. It is fastened in place by means of a strap passing around the abdomen, to the ends of which elastic bands are fixed, and a tendency to slip upwards is counteracted by tapes passing from the lower end round the perineum and tied to loops in the abdominal strap. The elastic bands have eyes which fit over hooks on the celluloid cap or "hat." The hooks are attached on a level with the lid, so that the elastic pressure is exerted almost perpendicularly and keeps the rim in contact with the skin all round the wound, absolutely preventing leakage. The rim being curved, its edge does not indent the skin in any way. The urine escapes by two outlets, one on each side at the lower end of the apparatus, and passes through india rubber tubing into a suitable urinal bottle which rests in the bed between the patient's legs. The lid is easily slipped on and off and has a hole in the center which is just big enough to admit easily a No. 24F catheter. The abdominal band is drawn to the requisite degree of tightness by means of strap and buckle, and it is best to see that it fits the patient properly before operation. Subsequently it will take only a few seconds to apply the apparatus. If continuous drainage is desired it is only necessary to pass a catheter through the opening in the lid and connect it with the supply tank. The flow being allowed to pass out through the tubes already provided for drainage.

NEW MANAGEMENT OF APPARENTLY UNCONTROLLABLE HEMORRHAGE FROM THE KIDNEY DURING NEPHROTOMY.—Miller (*Am. Jour. of Surg.*, Dec., 1907).—The method employed by the author in checking hemorrhage during nephrotomy, when to all ordinary methods it is practically uncontrollable, consists in packing the divided kidney with gauze and compressing the two halves over the gauze packing by means of gauze strips around the kidney. It seems necessary that the kidney be dressed outside of the wound and the packing not removed earlier than forty-eight hours, when, if the hemorrhage is checked, the organ may be replaced in position.

REPORT OF TWO CASES OF STERILITY IN THE MALE.—Hagner (*Amer. Jour. of Urol.*, Oct., 1907).—Two cases of sterility, following double gonorrheal epididymitis, and operated on by the method of Martin (anastomosis between the vas deferens and the head of the epididymis), seem to offer a great deal in these cases. In both cases reported by the author, repeated examinations failed to show any spermatozoa in the seminal fluid previous to operation, while since then, normal spermatozoa have been demonstrated in both cases and the wives of both men have become pregnant.

A SIMPLIFIED CYSTOCELE OPERATION.—Gilliam (*Jour. of Am. Med. Assn.*, Dec. 14, 1907).—This operation consists of:

1. An oval denudation of the most prominent part of the cystocele as in the old-time operation.
2. Dissecting flaps from the vaginal wall on either side of the denuded area with which to cover it.
3. Bringing the flaps together over the denuded area and suturing them to it and to each other.

The result is:

- (A) The cystocele is effaced.
- (B) The site of the cystocele is strengthened by an additional layer of fascia; that taken from the sides.

CORRESPONDENCE.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

Can we at the present moment form a definitive opinion of the value of the treatment of cancer by radiotherapy? Although this therapeutic method is comparatively recent there is no doubt that to-day we are in a position to cull from the large number of published observations, certain facts from which interesting conclusions may be drawn. Imprimis it would be well to remark that the extraordinary optimism which formerly characterized the treatment of cancer by radiotherapy—an optimism due to certain remarkable successes—has fortunately given place to a more modest if not more exact opinion of its worth and value.

Cutaneous epitheliomas, even those in the ulcerative and cauliflower states furnish the best results. On the other hand in certain cases though a tumor which a microscopic examination declares cancerous, disappears completely and leaves but a very slight cicatrix, the results are not gratifying enough to class them with those which are regarded as the best. The reason for this is quite apparent: neoplasms which have spread beyond the derma are not as amenable to treatment as when confined to the skin. But despite the fact that radiotherapy is not decidedly efficacious in these cases it is nevertheless effective as a means of retarding the evolution of the tumor and completing the surgical treatment. The accessible mucous membranes such as those of the mouth, of the anus, of the genital organs, are benefited by the x rays. Certain tumors of the breast not adherent to the skin or to the deeper structures and not complicated by adenitis, disappear at the end of a number of sances. When a recurrence of cancer appears in the cicatrix as a more or less superficial nodule, radiotherapy is of service. Besides the superficial position of sarcomata the nature of these tumors renders them amenable to treatment by the Röntgen rays; on the other hand, epithelioma, on account of their peculiar position, do not yield to treatment so readily.

Lymphoid tumors, the glandular and splenic hypertrophies of leucemia, react in a truly marvelous manner to radiotherapy; but very often, it has been observed, there are recurrences.

When a carcinoma is extensive and deep and the rays cannot reach the diseased tissues, treatment is always without good effect; especially is this true in cases of carcinoma of the stomach.

A very interesting point in the treatment of tumors by the Röntgen rays is the changes the tissues undergo after exposure. The examination of recent burns which have resulted from rays of the greatest intensity, and the result of numerous histological investigations, have been the means of clearing up the greater part of this question. The x rays, it has been found, are the destructive agents of cellular tissue, but have this characteristic, that their action is purely elective. They attack the nucleus and protoplasm of the cells and destroy them without producing any inflammatory reaction. The epidermic cells are most sensitive to the action of the rays; the same might be said about spermatozoa, the ovarian vesicles, and all lymphatic cells. As to the neoplastic cells, their

sensitiveness is so intense that their destruction takes place without any disturbance of the cells in the adjoining tissues.

The undeniable success of radiotherapy in cancerous cases, and the hopes founded on this treatment, received a sad blow when both doctors and the public began to realize that instead of being a positive cure in all cases it could, under certain circumstances, be the instigating cause in the appearance of cancer. In support of this assertion, we have instances where doctors and makers of x ray machines, whose hands are daily exposed to the rays, have developed grave cases of radiodermatitis, following ulcerations, and later on complicated at times by epithelioma. Again, cases where death has resulted from accidents have been reported. Do all these untoward occurrences incriminate radiotherapy? Are then all lesions resulting from some sort of irritation the real beginnings of a cancer? As to the fever which sometimes follows an exposure that has been too intense or too prolonged, it is undeniably an intoxication produced by the absorption of products from the destroyed cells. Therefore it seems to me to be going just a little too far to attribute the origin or the aggravation of cancer to radiotherapy.

The accidents which one may attribute to x rays are the erythemas, pigmentations, desquamations and ulcerations; these may be severe, are not readily cured and are inconveniences formidable enough to arrest further treatment. They are, above everything else, dangerous in ulcerative cancers of the skin and of the mucous membranes,—cases in which they may be provocative of a secondary infection.

We see, therefore, that while on the one hand good results follow the use of radiotherapy when experienced doctors attend the patients, on the other hand failure and complications follow as the outcome of inexperience. Above all, it is necessary to gage the duration and intensity of the rays according as the patient bears the treatment, and it is absolutely necessary to watch for those signs which when they do occur should make us at once stop further exposures, if accidents are to be avoided.

Radiotherapy ought always to be secondary to surgery in easily operated cases of cancer, but it should be its complement as a destroyer of those neoplastic germs in the wound which have not been reached by the bistoury. It is certain that, thanks to radiotherapy, we are better equipped than formerly to wage war against cancer, but this should not be overlooked, that its exact value should be our earnest study so that its judicious application may be made in all cases.

March 10th, 1908.

OBITER DICTA FROM FOREIGN JOURNALS.

VESICAL CALCULI FROM THE STANDPOINT OF MEDICO-HISTORIC ART.

Professor Eugen Holländer, the well-known author of "Medicine as Portrayed in Classic Painting" and "Medical Caricature and Satire" (Ferdinand Enke: Stuttgart) has an article of unusual interest, bearing the above title, in the *Berliner Klinische Wochenschrift* for February 3rd. The following lengthy extract gives an excellent idea of the research and erudition of the gifted writer:

As an indication of the slow evolution and practical adoption of surgical procedures in the Middle Ages, it would be well to mention that the few operations which had some popularity were really performed by empirics who followed certain specialties. Similar to Hippocrates, whose well-known oath forbade any surgical interference, the learned doctors and university-surgeons showed considerable timidity, if not fear, in connection with major surgical operations. Therefore it can readily be seen that with "the help of God," itinerary specialists, oculists, hernia and bladder surgeons rendered greater services than the savants of the medical faculty. But despite the fact that operations were frowned down by the regular doctors and surgeons, the impress left on the cultural development of the people, from the operations for cataract and lithotomy, was as great as that made by blood letting and minor surgery, procedures sanctioned by the regulars. As illustrative of this, the works of the Dutch and Flemish masters give decided evidence of predilections on the part of artists to portray the vocation of health-resort surgeons and medical charlatans. The mere mention of the many pictures by Rembrandt in which operations for cataract are shown, should suffice to convince us that the masters of the brush in the Middle Ages, though to a certain extent inspired by biblical subjects as they pertained to medicine—Rembrandt often availing himself of the subject of the healing of the blind Tobias—really got their inspiration from the work of the surgical quacks.

In the following pages—since the surgery of the kidneys on account of its rather recent adoption by physicians must be considered still a parvenu, with no claim whatever to an historical ancestry—I shall devote myself to a consideration of one of the most important diseases from an historic art standpoint—namely, stone in the bladder. The oldest and at the same time the most artistic example of an effort to memorialize this disease is seen on Tylman Riemenschneider's tomb of the Emperor Henry II. in the Dom at Bamberg. A photographic reproduction of this can be found on page 47 of my book, "Medical Caricature and Satire;" the picture being a copy of a plaster cast which is part of the medico-historical collection in the Empress Frederick Museum. The Emperor with his crown on his head is seen lying nude on his bed—in those days



Germain Collot performing lithotomy before Louis XI. in the Severin cemetery. (From Holländer's Die Karikatur und Satire in der Medizin. Verlag Ferdinand Enke, Stuttgart).

the shirt was unknown—and standing near him is a Benedictine monk, holding in his right hand the large lithotomy knife and in his left, the enormous stone which he is about to present to his exalted patient. The drawn features of the Emperor and the wide-spread toes betray the intense suffering recently undergone. A striking feature of the group is a wonderfully conceived and executed figure typifying Medicine, sorrowfully contemplative, because of the uselessness of asking for help.

Almost at the same time that this South German sculptor was working in the Dom at Bamberg on the tomb of the German emperor, Louis XI. of France, decided to allow Germain Collot to operate on him for stone in the bladder. Circumspect as this crafty king always was, he took the precautionary measure to subject some one else to the operation first; therefore in January, 1474, he repaired to the Severin Cemetery where one of his subjects, supposably a criminal condemned to death, underwent the operation. This dramatic scene was immortalized for us in a painting by Rivoulon some 400 years later and, but for the genius of this French painter, posterity would have no means, save an historical note, to form a true idea of the significance of the operation. (See illustration.) Par parenthesis, it is well to note here that the first lithotomist of whom history makes mention, in the famous family of lithotomists, the Collots, was Laurent Collot who had acquired a knowledge of the workings of Mariano's Apparatus Magnus from his Roman friend Octavian de Ville, and strange to say it was again a Henry II. but this time of France, who urged this physician to settle in Paris as his surgeon-in-ordinary. This title was inherited by Collot's sons, of whom Ambroise Paré relates that they gave him many calculi for his collection.

From this time on the secrecy surrounding the operation for stone in the bladder was swept away, and already in the sixteenth century we find, on the signs carried around in the market-places by the criers of traveling doctors, notices to the effect that they (the doctors) pride themselves on their skill as operators for stone "with the help of God." Should the reader desire information as to the thorough knowledge and the great urological skill of any one of these non-academical practitioners, I would advise him to read George Bartisch's illustrated book, because "in it he will find reports, experiences and instruction, in detail, about the excruciating pains caused by stone in the bladder," to use the author's own words. George Bartisch also wrote a celebrated work on the eye. His completed treatise on "Operations for Stone in the Bladder" finished in 1575, remained in manuscript until 1905 when Dr. Otto Mankiewicz caused it to be printed. In the printed book are reproduced the author's original illustrations of highly artistic instruments and of many operations. Of the last representatives of the traveling specialists originating in the ranks of the laity, we find a number of pictures in black and white of Frère Jacques known as the lithotomist, Jacques Boilieu, who flourished at the end of the 17th century and who was the first operator to make a lateral incision along the catheter, a procedure perfected later by a Hollander named Rau; and of Frère Cosme who lived a hundred years after, and achieved fame on account of the protected

lithotomy knife (lithotome-caché) and his suprapubic cystotomy (sectio alta). The prints of these two lithotomists in monk's garb, evidently made, at the time, for advertising purposes, impress one rather ludicrously since both are represented, despite their priestly accoutrements, with large lithotomy knives in their hands.

At about this time, academic surgery—the surgery endorsed by the various medical faculties—underwent a change in all countries; that is, it abandoned its doctrinaire and conservative characteristics and as a result of this, a less belligerent attitude was taken toward health-resort doctors and empirics. In a word, with the recognition of the quacks, old and narrow theories sooner or later lost their exclusiveness, thereby taking a new lease of life. In a large picture at Amsterdam, painted by Master Quinckard in 1737, are represented the various members of the surgical guild in session; delivering a discourse to them is Abraham Titsingh, a self-made surgeon and later on, state-lithotomist of Holland. Needless to add his address is on the subject of lithotomy and that it was highly interesting, the large number of stones and instruments shown, leaves no doubt. (See "Medicine as Portrayed in Classic Painting," page 71.)

All the cleverness attaching to the skill of the lithotomists and the attention given to the care of the peritoneum and the danger of hemorrhage, was made light of by a daring act on the part of a young Hollander. Driven almost insane by excruciating pain, he thrust a knife into his bladder and, unassisted, seized the stone and drew it out. Despite this act of heroism by which he showed that a hemorrhage is not such a *bête-noir* after all, he never achieved further fame. But as an indication that his one heroic act has not been forgotten, the mention he has received in pictorial art, attests. In the Nuremberg Germanic Museum is a copperplate engraving of a knife next to which a stone is outlined; explanatory of this picture are the following lines: "Anno 1651 on account of pain and distress, Jan de Doot had the courage, by means of a self-inflicted wound in his abdomen, to draw a stone therefrom; this was done with God's blessing, on the fifth day of the fourth month." This engraving was cut out of a journal in which, no doubt, an article, descriptive of this generally accepted historical operation, was printed. Jan de Doot's portrait, in the Boerhaaveian laboratory at Leyden, tells the story of the self-extirpated stone which is the size of a goose egg. To make the photograph of the picture, which Professor Tendeloo sent me, more realistic, the complete history of the case, the original knife, and the stone, all still in existence, are almost an integral part of the whole, for their photographs rest against the frame. In passing, it is worthy of mention that at the Exhibition of the History of Medicine as Told in Art and the Handicrafts, held at Berlin in 1906, Professor van Leersum exhibited the original Doot collection.

HISTORICAL NOTES.

ÆSCULAPIUS IN ROMAN HISTORY.*

Although we are in the habit of speaking of Æsculapius as the god of medicine, it must be remembered that the ancients knew as many gods of that name as it pleased the students of mythology to create in their imaginations. It was the fate of all pagan deities that, subject to the caprices of the sculptors who carved them, or to the fancies of the poets who sang them, they were multiplied *ad infinitum*, and seemed to originate the one from the other. Cicero, in his essay on the nature of the gods, accounted for three Esculaps. Pagan mythology, which attributes to all of these about the same quality, fuses them for ordinary purposes into one personality.

Old monuments picture Æsculapius sometimes in the form of a serpent, as in the medal which has for its inscription, "Epidaurion" because it was struck at Epidaurus. This same animal and the cock are symbols which accompany him nearly always and the object of these allegorical



Fig. 1.—Æsculapian medal from Epidaurus.

figures was to designate the vigilance and the wisdom required for the successful treatment of disease. The stick is always seen in the hands of this god to denote that medical science is the support of life.

It was customary to sacrifice a goat to him, which animal was supposed to be always feverish. The crow was also sacred to Æsculapius, according to the old pagan superstitions which drew from the movements and cries of this bird prophecies for the future.

In times of plague solemn supplications were addressed to Æsculapius; and Titus Livius says that Rome at one time sent ambassadors to Epidaurus to invoke the assistance of this benevolent god.

Æsculapius originally came from Messene, a city in the Pèloponnesus. Immediately after his birth his parents deserted him in the heart of a forest, where he was found by hunters who took pity on him and had him nursed by a she-dog. When he became old enough to be instructed he was placed in the care of the celebrated Chiron the Centaur, who taught him medicine, or surgery which were then synonymous. The pupil soon surpassed the teacher and, having acquired much learning, settled in Epidaurus, a city of Argos, to carry on his profession. He made several discoveries for the better treatment of disease and of

*From *Histoire Romaine*, by Catron and Rouille, vol. v., Paris, 1726.

wounds. He invented the probe and was the first to apply bandages to wounds. He also discovered purges and the art of pulling teeth.

As he lived in a period when they who distinguished themselves by great discoveries were deified, the people called him the son of Apollo and ranked him with the gods. Soon he had a temple of his own at Epidaurus. It was built outside of the city on a hill because the free open air was pleasing to the God of Health. There the priests who devoted themselves to the worship of the new god kept an adder, one of the kind which are easily tamed and which follow one everywhere, the bite being harmless, and the common people honored the serpent as if he were the god himself. Generally he had his hiding place between the feet of the beautiful statue which Thrasymede of Paros had carved. When the serpent came from his hole it was believed to mean that the cure of the sick was to be accomplished.

This statue was the master-piece of Thrasymede of Paros and was made of gold and ivory, seated on a throne to denote the mastery of this god over all sorts of disease. In one hand he held a stick, in the other a snake. By his side was a dog. The dog was there not only on account of the old story of the infant god having been nursed by a she-dog, but also because of the important part the dogs used to play, according to the assertions of Plutarch, in the cleansing of wounds by licking them.



Fig. 2.—Aesculapian medal struck by order of Antoninus Pius (d. 161 A. D.). This medal was made in remembrance of the arrival of Aesculapius at the Isle of the Tiber, as described by Livy. The large figure at the left is Chiron, the Centaur. Near him is a Satyr, or the god Pan, who holds a reed.

The statue also had a golden beard, but the tyrant Dionysius confiscated it, saying that it was not proper to attribute a bearded son to Apollo who himself had always been portrayed as a young man without a beard.

If the sick were cured they made a thank-offering of a cock. It was as in allusion to this custom that Socrates, condemned to die and therefor soon to be cured of all the ills of life, ordered the sacrifice of a rooster to Æsculapius.

When the Roman envoys came to Greece to invoke the aid of this god they were brought to his temple at Epidaurus, which had become very rich from the many thank-offerings for recoveries. The chief of the embassy was Ogulnius and it is probable that the Epidaurians sold their assistance pretty dearly when they acceded to the wishes of the Romans to take the serpent with them to Rome. It is said that, as by a miracle, the serpent made his appearance while the ambassadors were admiring the beautiful statue, and this was taken as a good omen for the happy outcome of their mission. The snake left the temple of his own accord, so the story runs, and, passing through the entire city, went straight to

the harbor and voluntarily entered the Roman vessel, taking refuge in the cabin of Ogulnius. This is not so incredible when one remembers that the serpent's master or tamer probably accompanied the Romans to their ship.

After several adventures, among which an escape and exciting recapture figure prominently, the embassy brought the serpent to Rome and a temple was erected for him, as being one with the god whom he represented, upon an island in the Tiber on which the poor animal had hid himself after his release from the ship.

There are several other instances on record of one of these adders having been taken from the temple and sent to some plague-stricken city. As late as the sixteenth century ruins of this temple were still to be seen, and the arrival of Æsculapius in Rome has been commemorated by the striking of a medal bearing the likeness of a snake. There is also, engraved upon a stone, the presentment of this god as a boy receiving some sort of healing plant from the centaur Chiron. Under the centaur is a Satyr, or the god Pan, holding in his hand his pastoral pipes.

Many superstitions of paganism bore relation to the power of the god of medicine. Hippocrates himself advised that a physician, in order to accomplish the cure of any disease, should first invoke the aid of Apollo, then of Æsculapius and his two daughters, Hygeia and Panacea.

BOOK REVIEWS.

HUMAN ANATOMY, INCLUDING STRUCTURE AND DEVELOPMENT AND PRACTICAL CONSIDERATIONS. By various authors. Edited by George A. Piersol. Illustrated. Pp. 2088. Philadelphia and London: J. B. Lippincott Co., 1907.

At first sight so much contained within a single volume, which numbers 2,088 pages, seems to be too bulky and cumbersome for practical use by students but the excellence of the book-binding and the readiness with which the book falls open at any page, soon establishes the usefulness of the fact that it is all contained within a single cover rather than being divided up. The book meets better, perhaps, than any book that has as yet appeared, all the requirements of a text-book of anatomy. The nomenclature is that employed by English-speaking anatomists, with a simplification of terms, running along with this the Basle nomenclature, the synonyms of the BNA nomenclature being placed in special type opposite the older terminology.

The contributors to the volume are Dr. Thomas Dwight, of Harvard University; Dr. Carl A. Hamann, of Western Reserve University; Dr. J. Playfair McMurrich, of Michigan University; Dr. George A. Piersol, of the University of Pennsylvania, on descriptive anatomy, general and special. Dr. Dwight has contributed the anatomy of the skeleton, joints and that on the gastro-pulmonary system and on the accessory organs of nutrition. The sympathetic nervous system, as well as the cerebrospinal nervous system, are described by Dr. Hamann; the muscular system, the blood vessels and the lymph system are described by Dr. McMurrich; histology and embryology are described by Dr. Piersol. An especially important part of the work is that on surgery, which is made practical, from an anatomist's standpoint, by Dr. J. William White and Dr. J. R. Barton, surgeons at the University of Pennsylvania. The illustrations in the work have been largely done by Dr. John C. Hicler, of Philadelphia. There are 1522 original illustrations appearing for the first time. In all there are 1734 illustrations, many in colors. The diagrams of the central nervous system are perhaps fewer in number than might be desired.

Further comment upon this magnificent work seems unnecessary, as the character of the contributors makes it stand as a book of unparalleled merit among American publications on general anatomy.

OUTLINES OF PSYCHIATRY. By Wm. A. White, M. D. Nervous and Mental Disease Monograph Series No. 1. The Journal of Nervous and Mental Diseases, New York, Publishers.

This is the first volume of a series of monographs on nervous and mental diseases edited by Dr. Smith Ely Jelliffe. This series aims to supply short treatises on subjects of interest to those in these specialties. The idea is a good one and has been attempted many times before, especially in some of the German publications. The monograph under consideration is an attempt on the part of Dr. White to present the subject of psychiatry in a brief form and in a readable way so that students can follow the lectures easily. It is in the nature of the *leit faden* so popular in Germany, and in a measure is a glorified development of our own compends. For a student's text-book this monograph can be said to be a success, for it possesses the prime requisites of a student's book—clearness of statement, clear arrangement of material and the avoidance of mooted questions. If we grant that this is a good text-book for students, we do not admit that it is a good example of a monograph for the specialist, which is the avowed purpose of this series. It seems that the notion underlying the publication of the series was allowed to relax in the instance of the work we are considering and it is to be hoped that the future publications will supply the need which is indicated in the prospectus. The crying need for a text-book on psychiatry in English, is one that will include case descriptions as illustrative of the text. That psychiatry is a clinical subject seems to be forgotten by the majority of writers on this subject, and in this book there is no indication that psychiatry deals with people who have diseases of the mind. As a text-book for students, White's psychiatry is a good book. Its limitations are those of such a work. For the student of psychiatry to whom this series is addressed, the book fails of its purpose, because it is largely a restatement of Krapelin, and Krapelin deserves to be in the hands of the student of psychiatry in its original form.

DISEASES OF THE LARYNX. By Harold Barwell, M.B., Lond., F.R.C.S., Eng., Surgeon for Diseases of the Throat, St. George's Hospital, Laryngologist, Mount Vernon Hospital for Diseases of the Chest, Consulting Surgeon for Throat and Ear Diseases; Cripples' Home for Girls, Consulting Laryngologist, National Association for the Establishment and Maintenance of Sanatoria for Workers. London: Henry Frowde and Hodder & Stoughton. Oxford University Press, New York, 1907.

The text-book with the above title is a welcome addition to the physician's library for the reason that aside from the subject which, by the way, is cleverly handled, the literary quality and the general make-up—the thick, unglazed paper, the large print and the almost entire absence of footnotes—should bespeak his favor. As to the book itself, though it makes no bid for originality, a perusal of the pages conveys to us unmistakably the thought that here we have what is frequently absent from text-books—the great interest which attaches to the contents of even a medical book when an author's personal experience is stamped upon it. Where so much is good it would be doing the author an injustice to single out any one chapter as being superior to another; nevertheless, we cannot refrain from calling the reader's attention to the chapters on Tumors and the Neuroses as instances in which the author, in our judgment, reaches the high-water mark of his scientific and literary perfection.

SEXUAL PROBLEME. Neue Folge der Zeitschrift "Mutterschutz." Herausgegeben von Dr. Max Marcuse. Preis per Halbjahr 3 Mark. Verlag von J. D. Sauerlaender in Frankfurt a. M.

Proper information concerning the "sexual problem," agitation for thorough changes in the "sexual ethics" and in the popular views concerning "morality," etc., are topics so widely discussed at present in Germany that the publisher of "Mutterschutz" has seen fit to change the name of his publication and limit its pages to articles dealing with the intricate problems of the sexual life. It can be assumed that many American physicians will be interested in this new journal.

HANDBUCH DER FRAUENKRANKHEITEN. Von Professor M. Hofmeier. Mit 268 Abbildungen im Texte und 10 Tafeln. Price: M. 14.00. Verlag von F. C. W. Vogel in Leipzig.

In its present form this well-known text-book appears as the fourteenth edition of the text-book on diseases of the female genitalia, first edited by Karl Schroeder. Ever changing with each new edition, a complete series of this work, which has proved so extremely popular with German students and teachers, actually represents a historical document of the development of gynecology. This 14th edition is in many essential features different from the preceding ones. Advance of science has necessitated thorough changes in the text; the rapid improvement in the technique of reproduction of colored illustrations, together with the desire of both the author and publisher to keep this work abreast with progress, led to the alteration of the majority of illustrations.

American literature contains some splendid works on gynecology, but certainly none superior to this latest edition of Schroeder's famous text-book.

DISEASES OF THE NOSE. By Ernest B. Waggett, M.A., M.B., B.C. (Cantab.), Surgeon to the Throat and Ear Department of the Charing Cross Hospital; Surgeon, London Throat Hospital, and Throat and Ear Department, Great Northern Central Hospital. London: Henry Frowde and Hodder & Stoughton. Oxford University Press, New York, 1907.

A practical treatise, well illustrated, on diseases of the nose should not fail of an audience with American readers. Especially good are the chapters on Adenoids and the Adenoid Facies, for they sum up for us a number of practical points somehow overlooked in works of greater magnitude. The lucidity of the text is such that one would think further illumination unnecessary, but this is not the author's idea, for the illustrations made expressly by him to explain the text, are as expressive as the writing and cannot fail to be the means of familiarizing the reader with the features he is likely to meet with in practice. Altogether the book has much to commend it on the score of saliency and terseness.

ABEL'S LABORATORY HAND-BOOK OF BACTERIOLOGY. Translated from the Tenth German Edition by M. H. Gordon, M.A., M.D., Oxon., B.Sc. With Additions by Dr. A. C. Houston, Dr. T. J. Horder and the translator. London: Henry Frowde and Hodder & Stoughton. Oxford University Press, New York, 1907.

The English translation of this popular German book in the Oxford Medical Manuals will undoubtedly bring home to English and American readers the fact that a text-book to be of value need not have the discursive qualities of our usual medical publications. While the author modestly disclaims the honor of having written a text-book—he calls it a guide to practical laboratory work—its contents are practically of the same worth as that of more elaborate books on the same subject, with this additional qualification that brevity, in this case, stands for much in enlightening not only students but physicians, apothecaries and chemists.

THE MELLIN'S FOOD METHOD OF PERCENTAGE FEEDING. Published by Mellin's Food Company, Boston.

It is not our custom to mention in this column "trade books"—books published by manufacturers for advertising purposes—but this book, recently from the press of the Mellin's Food Company, contains so much that is available for the busy doctor that is not to be found in general books of reference, and shows such painstaking experiment and research in its preparation, that we are satisfied our readers will be pleased to have it called to their attention. The directions for preparing creams, top-milks, bottom-milks, whey, etc., exhibit a great amount of expert work covering the subject very thoroughly; these alone should be of great value to physicians. The tables of formulæ for feeding mixtures for infants, include almost every desired combination, through a wide range of variations. The object of the book is to save the busy practitioner the computations necessary for the determination of the percentages of nutritive constituents of any selected formula and to enable him easily to change the ingredients in said formula to any proportions desired.

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EDITORIAL.

CRIMINALOIDS AND RESPONSIBILITY.

Criminaloid is a dangerous and useless term invented some time ago by Prof. Edward H. Ross, the well known sociologist, to describe what he believes to be a distinct class of men with moral insensibility, men who are mentally so constructed that they do not realize the criminality of certain business transactions. They often become rich, influential and leading citizens, but their wealth is "tainted" with shady practices. As a matter of fact there is no difference between them and the recognized swindler or ordinary criminals who are all perfectly aware of the harm they do to others. There is a certain standard of honor even among professional thieves, and it is no wonder that the borderland types should occasionally be patterns of virtue in domestic and church life, even abstaining from alcohol and tobacco.

Perfect morality is never found because it is unnatural. Our moral standard is something beyond our reach and we constantly strive for it. That is, we are all potential criminaloids if there can be such a class. The term is unscientific and should not have been taken seriously. This does not mean that the average man does not love righteousness for its own sake, but it does mean that what we consider righteous is that which experience shows is personally and socially best in the long run.

The responsibility for criminal conduct seems to be the point raised by the new term criminaloid. There is an implication of irresponsibility for they are said to be not criminals but like criminals. Therein is the danger. These men are as responsible as any other free person who claims and exercises the right of being at large. If they blunder into crime they must take the consequences. No man can be entirely altruistic or he destroys himself and family, nor can he be wholly selfish for he injures those upon whom he depends. Proper conduct is a nice adjustment of the two, in accordance with the natural law of mutual aid.

Criminal acts are merely those selfish ones which unduly ignore the rights of others and being devoid of all altruism are the result of defective judgment. Merely because a man has been successful in acquiring riches is no reason to excuse him from punishment, any more than a common burglar caught with the goods. Unfortunately the influential "business man" and the influential burglar often use money to escape the punishments due them for defective judgment. Yet unless there are sufficient deterrent punishments, the vast majority of mankind would be criminal. It may be harsh to say that every man has his price, but it is a fact that we all do that which we think is the least harmful or the best in the long run for ourselves. Moral behavior is often—too often—due to a fear of consequences of immoral conduct, although as said before we all strive for righteousness. Criminals do not look far enough ahead, their price is too low, they are too selfish to be tolerated in civilized society, they struggle for existence in prehistoric open warfare on others, they are parasitic instead of competitive, and must be eliminated whether they are burglars or bank presidents.

All questions of actual criminality and the potential criminality of those whose forethought makes them moral for fear of consequences are thus intimately bound up with psychology and psychiatry, two subjects with which every general practitioner should be thoroughly conversant. It is high time, therefore, that the medical profession as a body take part in all reform movements for they are the natural leaders by the very circumstances of their calling.

THE INSANITY OF OUTDOOR WORKERS.

The excessive number of insane among outdoor workmen is one of those startling things now and then discovered among the dry details of official reports. The New York State Commission in Lunacy in its eighteenth annual report, which includes statistics to September 30, 1906, has tabulated the relative frequency of mental disease among various classes of the population, and groups the mechanics according as they labor indoors or out. The chart shows that the indoor workers furnish far less than their share of insane, while the outdoor workers furnish an enormous excess, "laborers," for instance, have a percentage three times their share. It is stated that possibly the physical hardships and low wages of this class are the causes of the strain, yet this cannot be true because the vast majority of factory employees are very poorly paid and live under great hardships, while some of the outdoor mechanics are among the best paid. Contrary to the general impression, agricultural and pastoral employments furnish less than their proportion. Isolation

of country life does not cause an undue number of cases, nor do its physical hardships and poor income.

The mental inefficiency of unskilled laborers is undoubtedly the cause of their greater susceptibility. They are men unable to learn or practice a skilled employment. Many have given up and sunk to common labor, while others never made the start, being congenitally defective. Their irregular lives and periodical excesses are results of their small mental calibre and congenitally-warped brains, but in turn are also causes of the subsequent mental diseases; for such men are peculiarly susceptible and break under adversities that the better endowed endure. The educated furnish less than their share and the illiterate more, for another table of statistics of nearly 100,000 cases shows that only one-half had a common school education, less than 5 per cent. had a collegiate or academic course, 18 per cent. could merely read and write, $3\frac{1}{2}$ per cent. could read, 8 per cent. were wholly illiterate and 17 per cent. were unknown. As it is known that children drop out of school from mental incapacity more than from necessity to go to work, it is quite evident that possession of an education is evidence of the possession of a brain which resists mental disease. It is not necessarily true that education of itself is a preventive, except in so far as it keeps the brain in healthy activity. Yet all that does not explain the great susceptibility of outdoor skilled workers—rather mystifies it, in fact. They are above the average in intelligence and education, yet furnish nearly double their share, while the indoor workers furnish only about half of their proportion. As far as known, the two classes are of the same mental calibre, given to equal excesses and irregularities. Moreover, the physically strong tend to robust outdoor work while the weak flock to indoor sedentary trades, and this still further darkens the mystery. Everything is in favor of the outdoor mechanic and yet he is injured by some factor from which the indoor laborers and farmers are shielded.

The relative wholesomeness of urban and rural outdoor life will probably explain the remarkable paradox. It is a well established fact that an unsuitable climate affects the nervous system of only those who expose themselves to it—self-evident as that may seem when thus so simply stated. That is, a white man in the tropics will preserve his health a long time if he houses himself in the hottest and lightest part of the day, to escape the well-known dangers of excessive heat and light, but he who works out in the sun from morning to night is soon a nervous wreck, if not a mental one also. The American climates are far different from our cool, shady, ancestral ones in Northern Europe, and the two factors of heat and light are far worse in the streets than in the shaded farm yards. Rich city dwellers who become nervous wrecks, are promptly sent to the cool, shaded country to regain health, and go there every

summer sick or well; but the poor mechanic must stick it out, as his busy time is in the summer, and he must run all the risks of sun exposure, from which the indoor workers are protected. Here, then, is another big field for subsequent investigation, to prove conclusively why indoor labor, so dreadful as to tuberculosis, is so beneficial as to mental health. What is needed is a study of the months in which these various classes break down, for if there is a great excess at any season it may indicate the causes and lead to measures of prevention. A tabulation of complexions would also give a clue, for if blonds are more susceptible in any outdoor trade it indicates light injury to which the brunettes are more or less immune. It is already known that the blond type does not stand urban life, either here or in Europe, nor can it stand crowding. The survivors of tenement life are largely brunettes. It is also well known that in a given condition of heat and light the blonds suffer more than brunettes from nervous and mental diseases.

THE PROTECTION OF THE PUBLIC HEALTH.

A bill concerning the protection of the public health by means of increasing the scope of activities of the Public Health and Marine Hospital Service, was introduced in the Senate of the United States by Mr. Gallinger on March 13th, 1908. This bill was introduced into the House of Representatives by Mr. Hepburn. It has been read twice in the Senate and referred to the committee on Public Health and National Quarantine.

To medicine in general, this bill bears most important relationship, as the duties therein imposed upon the Marine Hospital Service are of the most wide-spread and important influence. The Marine Hospital Service will be instructed, provided the bill becomes a law, to make special investigations into the prevalence of tuberculosis, typhoid fever, rabies and other diseases affecting man; to study the conditions influencing their propagation and spread and the methods necessary for their prevention and suppression. It will require that the health authorities of the various states, territories and District of Columbia, detail officers to coöperate with the authorities of the Marine Hospital Service in their measures for the protection of the public health. The Surgeon General of the Marine Hospital Service shall publish and disseminate sanitary bulletins and exhibits of practical information concerning the prevention of communicable diseases.

It is clear to almost anyone who has investigated, or who comes in contact with an epidemic, that the local public health authorities know little or nothing regarding the management and isolation of infected districts. To this end the bill under consideration provides that a school

of hygiene shall be established which shall be associated with a hygienic laboratory, and at which state, county and municipal health officials may be given a thorough course of that special instruction which should be utilized in the performance of their official health duties.

Another important feature contained in this bill is that which pertains to the investigation of the pollution of interstate waters, as it affects the public health. It recommends the appointment of a sanitary engineer who shall be competent to solve technical problems connected with the purification of water and sewage. The bill provides for the calling of conferences at Washington where matters of interest to the public health may be discussed by the health authorities.

A bill which contains so much of good as this, a bill which has as far reaching influence for the betterment of our public health, and which will put into the hands of those specially trained for the work, the management of conditions that so profoundly affect our national welfare and commerce, should surely meet with the unanimous support of medical men throughout the country. To us it seems highly advisable and proper that any influence which can be used or directed by physicians to help in the passage of this bill should be exerted. .

THE PLAGUE ON THE PACIFIC COAST.

The plague in San Francisco should cause no alarm if the health authorities will continue to publish the true facts as to the situation. It was only when the notorious Schmitz dishonorably denied its presence that the public elsewhere became worried and ceased to visit the coast, to the injury of those very tradesmen who were demanding suppression of the facts. It is, unfortunately, true that the warfare conducted by Passed-Assistant Surgeon Ruppert Blue, of the Marine Hospital Service, has so far failed to wipe out the disease; but that was to be expected, as the infection was so wide-spread and the rats were carrying it far and wide, creating new foci every day. In time the disease will disappear, as it did from Manila under similar management, and Manila is a far worse field to deal with than San Francisco. It is primarily a rat disease and man is only an accidental host, though no one seems to know what part of the world is the permanent home of the bacillus. It is somewhere in Eastern Asia, just as the comma bacillus is a native of India, both occasionally starting out on world travels only to die out in time.

The role of the flea as plague carrier seems to have been conclusively proved by the British Plague Commission in 1905. The experiments were quite ingenious and showed that animals protected from fleas did not contract the disease, though kept in cages adjoining the infected animals, but that when infected fleas were introduced the disease was con-

tracted. Moreover the bacilli were repeatedly demonstrated in the contents of the alimentary tract, and the feces proved infective. The bite itself is harmless as the mouth parts are sterile, the infection being probably an inoculation of flea feces into the bite by the act of scratching. According to Major A. H. Moorhead, I. M. S., the cat flea (*pulex felis*) does not transmit the disease, and the human flea (*pulex irritans*) does so only very rarely. The main species are the rat flea of India (*pulex cheopis*) and the rat flea of north Europe (*ceratophyllus fasciatus*). These facts show that, when properly clothed and cleanly in habits, there is exceedingly little chance of humans contracting the disease. The oriental native is partly naked and thus more exposed, and the fact that the bubo generally appears in the groins shows that he is infected on the legs. If he bathed frequently it is quite likely that he would wash off the germs even if he were bitten. In addition, if everyone will keep his own house free of rats he will be exposed to little or no danger of contracting the disease, but a flea-ridden hut is of course fatal. Indeed a word might be said about scratching, or rubbing, itching spots in time of plague, for it is well to remember that it might be a flea bite which we are inoculating ourselves. It is found that the bacilli cannot live a saprophytic existence and are so delicate that they die within twenty-four hours after expulsion from the body of the flea. Infection in a house exists not on the walls or floors, but in the bodies of fleas which have bitten diseased rats. Disinfection is the act of killing these hiding animals.

Opposition to rat extermination is now and then expressed by physicians lacking knowledge of the facts. Of course rats can be exterminated permanently in only one way, and that is by being so clean as to our waste disposal and so careful in protecting foods, that the rats have nothing to eat. They are scavengers existing for man's benefit, and the experience of Japan is to the effect that after a rat crusade neighboring animals quickly invade the clear area and increase to the limit of available food, but that does not disprove the necessity for killing every rat we can when plague exists, for we are thus removing the sources of the infection. In time the bacilli lose their virulence and die out. Apparently they can exist permanently only in their native land, wherever that is. Nevertheless, the failure to eliminate the plague in San Francisco might be due to the fact that infected fleas are not killed in the houses harboring diseased rats. It does seem that disinfection must be directed against them, in the same manner that disinfection in yellow fever is directed against the mosquito. The patient in each case is perfectly harmless, and isolation is merely to prevent insects biting him. People need not be afraid of visiting the Pacific Coast. Open dangers are easily avoided and as long as the authorities continue to take the public into their confidence, trade

will not suffer. But if they begin concealing the facts, then is when alarm spreads and commercial disaster results.

The Plague Commission also discovered that there is a chronic form of rat plague, in which the bacilli reside in the abdominal lymph glands and slow abscesses and that quite a percentage of rats recover. This should have been expected for it is one of the axioms of biology that a pathogenic organism, to survive permanently, must not kill all its hosts or it destroys its own food supply or dies before it has a chance for transfer to a new host. For these reasons the rabbit diseases introduced into New Zealand failed to kill off the rabbits. As in the case of tuberculosis and leprosy in man, the plague bacilli have established in these rats a beginning of "tolerant immunity" as described by E. Lay Lankester, and are virulent only when they attack races which have not yet been infected. As it is not a human disease primarily, man never will achieve this tolerance and it is doubtful whether our rats will either, as they die too quickly and in such a large percentage. The cholera bacillus has never yet established itself permanently outside of India, as the environment eventually kills it, and there is as little chance of the plague bacillus becoming a permanent American resident. The advantage of modern sanitation is its ability to kill the invaders promptly and save the enormous mortality sure to happen while the bacilli are dying out in the old way of gradual loss of vitality. So let the rat and flea crusade continue.

RECENT ATTACKS ON SANATORIUMS.

The reaction against the tuberculosis sanatorium is quite natural but need cause no alarm. The pendulum of opinion swings because some great man, by an epoch-making discovery, moves the support to a new position. The pendulum follows but swings past the perpendicular and though it swings back it eventually comes to rest in the position the great man intended it should, and there it is kept at rest by the conservatism of mediocrity until some other great man pushes the support on again. Conservatism is the inertia of public opinion which is therefore always difficult to move and also to be stopped. Indeed it sometimes seems that "opinion" in or out of the profession is like dead matter—powerless to change its condition of rest or motion.

The sanatorium was designed merely to remove patients from deadly conditions and yet the idea grew up that it was essential and the recoveries were permanent even if the cured returned to the conditions which caused the original disease. The pendulum swung too far and is now about to start on its return stroke and we must expect to hear de-

nunciations of the sanatorium; indeed it has already been roundly abused by one French physician.

The reduction in tuberculosis mortality began over fifty years ago in England when the yearly death rate was forty per ten thousand population, but it has steadily declined until it is now less than 11.5. Dr. Bulstrode of the English Local Government Board, who made the recent report on sanatoria, shows that these institutions have not influenced the decline in the least. In addition he gives some rather painful statistics of the early death of the great majority of patients discharged from English sanatoria. Such results are inevitable unless the "cured" avoid the life conditions which originally broke their resistance. Home treatment is so perfected there should not be such relapses nor indeed is institutional treatment so essential as it once was when we could not remove the harmful conditions from the patient but had to remove the patient from the conditions. Nevertheless the sanatorium has come to stay, for it has proved its usefulness in permanently curing those who were willing and able to keep up proper living after discharge. It cannot accomplish the impossible, and the present reaction will only settle the pendulum of professional opinion in the right place.

LITERARY NOTES.

M. Vannier has recently contributed to the *Bulletin Médical de l'Algérie*, an erudite paper on the pharmacology of Algiers and Tunis, in which he describes, in detail, the curious magic practices which still obtain among the people. The most widely known of the extolled magic methods is the amulet, the writing on which is supposed to be done with ink of a decidedly sympathetic nature. These amulets, pledges of health, are bits of paper on which the priest writes a verse from the Koran. They are square or triangular in shape, are supposed to be imbued with all the virtues of the Sacred Bird and must be eaten in case of fever; burned and the ashes swallowed in case women wish to become pregnant; placed in a small metal box and suspended in close proximity to the affected part in inflammation of the lungs, and, when there is no disease to combat, are pledges of a continuance of health. All Arabian women and most men are happy possessors of amulets. The following is a translation of the writing on one of these amulets: "Treatment for those who have weak sight. Eat the heart of a pewit mixed with money, or better still, char its head, pulverize it and prepare as a collyrium. This will have a salutary effect. * * * * For a cough, chra a pewit in a pan, flesh, bones and feathers, and mix

with honey. Pills made of this and taken once a day will cure, provided God Almighty is propitious." To show that the pewit is not the only bird held in high esteem, the clever writer of the lines adds, "the owl has the same remarkable qualities, and, prepared in the same manner, will not fail to cure the many diseases which afflict mankind."

Albert and Alexandre Mary, the well-known French disciples of the German biologist, Ernest Haeckel, have recently published through the publishing house of J. Rousset, Paris, 1907, a book entitled "Evolution and Transformation: The Secrets of Life" (*Evolution et transformisme. Les secrets de la vie*), in which they declare themselves anew staunch supporters of the monistic doctrines peculiar to the writings of Haeckel. The articles pertaining to evolution and transformation contain their latest researches on the protameba nebulosa, protogenes and protomyxa; and a study of the monera, the real basis of the biologic evolutionist. According to Huxley, Haeckel "conceives that all forms of life originally commenced as monera, or simple particles of protoplasm, and that these monera originated from not-living matter" and though we have for some time accepted this as a theory, the authors of this new book show how by ingenious reasoning and experimentation, they have arrived at certain facts upon which the views of Haeckel may rest with considerable certainty.

An arresting book for the student who is interested in the origin of surgical instruments is John Stewart Milne's "Surgical Instruments in Greek and Roman Times" (Oxford University Press, New York). In the comparatively short space of 173 wide-margined and large-printed pages the author has succeeded, by a direct literary style, and an excellent judgment as to what best suits the Anglo-Saxon student of medical history, to fashion a book that is stripped of all extraneous matter and is not burdened with the author's own opinions. That his sources of information are the best—Brunner's *Die Spuren der römischen Aerzte auf dem Boden der Schweiz*, Deneffe's *Etude sur la Trousse d'un Chirurgien Gallo-Romain du III Siècle*, Adams' translation of *Paulus Aegineta* and the papers of *Vulpes*—that the photographs of the instruments are of the highest artistic standard, and finally that erudition is made the means of engaging writing and not the agent of a prolixity almost maddening, should invite the earnest attention of all who are interested in something more than the mere practice of surgery as it obtains to-day.

In a recent number of the *Archives d'électricité médicale* a contributor prints statistics in regard to the quantity of radium at present in the

world. On all sides we often hear that in the whole world the quantity of radium amounts to less than a gram. Small as this amount must seem to the uninitiated, it is really in excess of the truth as near as we can get to it by examining statistics which proclaim exactly the manner of its distribution. The subjoined list, taken from the French journal, gives an excellent idea, not only of the quantity of radium as it exists to-day but its division among certain scientists:

Mme. Curie	15 milligrams.
Sir William Ramsey.....	20 "
Sir William Crookes.....	20 "
Prof. d'Arsonval	20 "
Prof. Bordas	10 "
M. Becquerel	10 "
Thomas Edison	20 "
Other owners, doctors for the most part.....	20 "

As to commercial radium, the strength and activity of which is very variable, it is well-nigh impossible to form any statistics for the reason that it is so widely distributed. But this we do know, that the quantity of pure radium contained in the commercial sort is much less than is shown in the above table.

M. Vannier has recently contributed to the *Bulletin médical de l'Algérie*, an erudite paper on the pharmacology of Algiers and Tunis, in which he describes, in detail, the curious magic practices which still obtain among the people. The most widely known of the extolled magic methods is the amulet, the writing on which is supposed to be done with ink of a decidedly sympathetic nature. These amulets, pledges of health, are bits of paper on which the priest writes a verse from the Koran. They are square or triangular in shape, are supposed to be imbued with all the virtues of the Sacred Bird and must be eaten in case of fever; burned and the ashes swallowed in case women wish to become pregnant; placed in a small metal box and suspended in close proximity to the affected part in inflammation of the lungs; and, when there is no disease to combat, are pledges of a continuance of health. All Arabian women and most men are happy possessors of amulets. The following is a translation of the writing on one of these amulets: "Treatment for those who have weak sight: Eat the heart of a pewit mixed with honey, or better still, char its head, pulverize it and prepare as a collyrium. This will have a salutary effect. * * * For a cough, char a pewit in a pan, flesh, bones and feathers, and mix with honey. Pills made of this and taken once a day will cure, provided God Almighty is propitious." To show that the pewit is not the only bird held in high esteem, the clever writer of the lines adds "the owl has the same remarkable qualities and, prepared in the same manner, will not fail to cure the many diseases which afflict mankind."

ORIGINAL ARTICLES.

THE ROENTGEN RAY IN THE DIAGNOSIS OF RENAL AND URETERAL CALCULI.

By R. D. CARMAN, M. D., of St. Louis, Mo.

Year by year, the inadequacy of diagnosis based upon clinical symptoms alone, that is to say, the subjective symptoms of the patient and the signs elicited by ordinary means, becomes more and more apparent. Too much praise cannot be accorded those clinicians who, by combining careful observation, judicial ability, common sense and occasionally rare intuition, have made diagnostics a real science. The things which they have learned and taught will never become entirely obsolete; they will be modified, developed, elaborated and improved, but, constantly the demand both of faculty and laity, grows more insistent for increasing exactness. Probabilities become less tolerable, errors less excusable. The facts must be had, even though obtainable only by the most extraordinary methods, and every possible accessory is expected to be used. These remarks are especially pertinent to kidney stone, the diagnosis of which, in the past, has rested chiefly upon the following clinical symptomatology: 1. Attacks of renal colic characterized by intense pain, either in the back, or, more typically, in the flank of the affected side, radiating into the testicle and inner thigh. 2. Hematuria and other alteration in the urine, such as the presence of sediment and stones. 3. The signs and symptoms of complications, such as pyelitis; that is to say, chill, fever and pyuria.

Now, while these symptoms are present in many cases of kidney stone, it is inexact to speak of them, as does one textbook, as being "definite and characteristic," for it is also true of many cases that stone may be present without these symptoms; that these symptoms may be present without stone, and that the symptoms may be referred to the opposite side. Some of these facts have been admirably set forth by Charles Lester Leonard and others. In further corroboration I wish to call your attention to some of my cases hereinafter reported.

Boggs and many others, hold that the radiographer should also be a clinical diagnostician, and the writer cheerfully endorses this view. With his uncommon opportunities, the radiographer cannot fail to be interested in the symptomatology of these cases, and in everything of every sort that will aid in their diagnosis. The clinical examination of each patient should be comprehensive and thorough. But—and here I wish to speak with emphasis—the radiographer should not be unduly prejudiced by the information thus gained. The radiograph should stand upon its own bottom. It should be distinctly positive, or distinctly negative. A careful clinical examination plus a careless x ray examination

becomes a doubtful quantity, and no amount of the former will make up for the latter.

Value of the Method. The value of the Roentgen rays in the diagnosis of renal calculi has been so clearly demonstrated that little is left to be said in this regard. Joseph F. Smith quotes Henry Morris as reporting 44 nephrectomies for stone, diagnosticated by clinical methods alone, where no stone was found. On the other hand, Kümmel and Rumpel report a series of 18 cases diagnosticated by the x ray, in all of which the stones were found and removed. A host of similar comparisons can be gleaned from the literature. Indeed, hostile criticism of late rather takes the form that a positive finding is valuable as confirmation, but that a negative finding is of doubtful significance. With a varying, and, as yet, incompletely developed technique, this view may have some justification, but with a further elaboration of methods it will undoubtedly be true, as Cole, Kümmel, Rumpel, and many others, already assert, that with a negative x ray finding, there is no stone present.

W. W. Keen remarks that it replaces an uncertain guess by a positive diagnosis, and its negative value is quite as great as its positive.

J. B. Herrick, editor of "Nothnagel's Practice" (diseases of the kidney), commenting upon Senator's rather mild advocacy of the x ray method says: "The value of the x ray in locating stones has passed beyond the experimental stage. The Roentgen rays will nearly always show a shadow when stone is present, and a failure with a stone present is likely to be due to an error in technique."

Bevan¹ holds that "a perfect skiagraph, with the proper amount of detail and differentiation is of greater value as a means of diagnosis than an exploratory operation. I am done with incomplete operations and operations done in the dark for kidney stones. A good skiagraph will show whether there is one or more stones. It will show which side the stone is on and exploration of the ureter can be omitted in an aseptic case when, from a clear x ray picture, we feel confident all stones have been removed."

Carl Beck² says that, contrary to the abundant proof of reliability of renal skiagraphy, text books hesitate to recommend, and even warn the practitioner against this method, because others have observed grave errors committed in its employment.

Whenever error has been committed, it was due to the individual and not to the method, and the latter should not be held responsible.

A definite diagnosis in suspected lithiasis can be made, *i. e.*, a renal calculus must invariably show, provided the calculus is there.

Fenwick³ states that one of the most distressing of failures in urinary surgery is to cut into a kidney and mutilate it, perhaps irreparably, in order to find a stone which has long ago left that organ and traveled down the ureter; and yet this must happen at least in 22 per cent of all cases of renal stones if the x ray expert is not called upon to help in the diagnosis. "That the expert radiographer can guide the

urinary surgeon with a precision unattainable by any other means is without cavil, and I assert this on an experience of 500 operations upon the kidneys. In fact, I know of no obligation so great as that which the expert radiographer places the surgeon and patient under when he accurately defines a stone in the lower ureter."

Crawford⁴ thinks that we are not justified in proceeding blindly in search of a stone, the location of which may be positively demonstrated by the use of this agency.

Holland⁵ declares that with a competent x ray examination the operation becomes no longer, so as to speak, an exploratory one. The sufferer is encouraged to submit to operation much sooner, dangerous delay is thus avoided and the surgeon knows exactly what he is going to search for, the exact spot to incise, and, in many cases, exactly how many stones there are. He further remarks that if the x ray shows a small stone engaged in the ureter, with no symptoms of obstruction present, this knowledge would be of great value to the physician as evidence of the possibility of the passage of the stone, and repeated examinations might show the stone gradually passing from the ureter, or its presence in the bladder.

Leonard⁶ remarks that the Roentgen method determines with absolute accuracy the presence or absence of all calculi in every case in which a satisfactory negative can be secured, if the negative is correctly read. "The Roentgen method of detecting or excluding calculi from the kidneys and ureters has proved itself to be absolutely accurate, when applied with the requisite technique. The errors which have been noted were all due to defective technique, or inexperience, in reading the negatives. The absolute negative, as well as the positive diagnosis of calculous disease is feasible. It depends solely upon the production of negatives having detailed shadows of tissues less opaque than the least opaque calculus; when such a negative is obtained and correctly read, no error can be made."

Kümmel⁷ says: "Our experience has proved that every stone in the kidney becomes visible on a good x ray plate, if the proper technical precautions are observed, and that, on the other hand, if the plate fails to show a shadow, a stone is not present." And he speaks from an experience of 328 cases!

Some Statistics. Owing to the varying manner in which the case figures are furnished, I have found it impossible to tabulate them. However, the following are the more important statistical statements.

C. F. Holland⁸ has examined 79 cases and in 22 stone or stones have been found. In 10 cases other shadows occurred, some easily differentiated from stone, others not.

A. B. Johnson⁹ has examined 125 cases. In one of his earlier cases, a shadow upon the plate, due to a defect in the gelatin, was diagnosed as a stone. The patient was operated on and no calculus was

found. In 30 cases the positive diagnosis of stone was confirmed by operation. One negative error was due to the use of too short a plate.

F. H. Jacob¹⁰ reports 9 cases. In 6 cases the stones were located and removed by operation. One negative case was lost sight of. In one case in which he failed to demonstrate a stone, but in which the severity of symptoms warranted an operation, a villous tumor of the pelvis of the kidney was found. In the other case, examination showed three small shadows in the left loin. Patient was operated on and three small calcareous glands were found in the mesentery. There was no kidney on the left side.

Max Reichmann¹¹ reports 64 cases; 23 gave positive results, confirmed by operation. In one case a diagnosis of pyonephritis in one kidney and nephrolithiasis in the other, was made. Operation confirmed the pyonephritis on the one side, but on the other only infected foci were discovered, without the presence of any concretion. Thirty-three cases were absolutely negative, so far as the Roentgen plates were concerned.

L. G. Cole¹² states that in 179 cases he has failed once to show a renal calculus when it was present. The failure was due to the plate not extending high enough to cover the kidney region. In two cases he made a diagnosis of stone when none was present.

Kümmel and Rumpel¹³ report 18 cases diagnosed by the x ray, all of which were subsequently removed by operation.

Reid¹⁴ examined 150 cases. Of these 63 were subsequently operated upon. A positive skiagraphic result was given in 36 cases, 25 in the kidney, 3 in the ureter and 8 in the bladder. Of the 25 renal cases, the stone was found by the surgeon in 23 cases and in one it was found post mortem. In one case it was missed, being merely a small collection of sandy material. Of the 3 ureteral cases, 2 were removed and the third passed subsequently. In the 8 vesical cases the stone was found and removed in 7 instances. A negative skiagraphic result was followed by operation in 12 renal cases and 15 vesical, and of these, a stone was found once in the kidney and once in the bladder.

Joseph F. Smith¹⁵ states that in 27 cases of suspected kidney stone operated upon by Bevan, it was possible to make a positive diagnosis of calculus in 13 cases, a doubtful diagnosis in one case and a negative diagnosis in thirteen cases. In the doubtful case, operation revealed a single stone the size and shape of a pumpkin seed, lying well up under the last rib. More careful examination of the skiagraph in this case showed a rather vague shadow directly over the last rib. Dr. Smith states that the failure here was due more to an error of interpretation of the skiagraph than to the skiagraph itself. In the thirteen cases in which a negative diagnosis was made, the following conditions were found at operation: Tuberculosis, 5 cases; pyonephrosis, 2 cases; essential renal hemorrhage, 2 cases; cysto nephrosis, 1 case; hydronephrosis, 1 case; polycystic kidney, 1 case; hypernephroma, 1 case.

Leonard¹⁶ reports 59 cases of suspected renal calculus examined with

the x ray. Of these 59 cases 12 had stones, either in the kidney or ureter; 8 of the cases were confirmed by the operation. One case later passed a ureteral calculus, two others had ureteral stone, but the age of the patient did not warrant operation, and one case of positive diagnosis refused operation.

Of the negative cases, seven were operated upon and the negative diagnosis confirmed in all except one, where faulty technique was responsible for not finding the stone, as the portion of the kidney containing the stone was not in the plate.

Kümmel⁷ reports 328 cases, with 65 positive cases confirmed by operation, and makes no mention of any errors.

To the foregoing may be added the writer's 55 cases, reported herewith. In these there was technically one positive error, the stone being in the appendix and not in the ureter. No negative errors have thus far been demonstrated.

The above figures represent a total of 1093 cases with only 12 errors, an error percentage of about 1 per cent. This percentage is quite small, and covers a period of imperfect technique and inexperience. It can be justly claimed that the x ray diagnosis of renal stone is quite as reliable as the Widal reaction in typhoid, or the bacteriologic findings in diphtheria.

Advantages of the Method. 1. The examination is painless. No general or local anesthetic is required, with the resultant depression and subsequent treatment.

2. It requires very little time, and the dangers of burn are practically nil.

3. It gives the exact location of the stone or stones, whether in the kidney or ureter, and, most important of all, gives the number of stones present.

4. There is no exploratory operation necessary, as far as the detection of calculi are concerned.

5. Calculi bilaterally situated are recognized, and the danger of operating upon the wrong kidney or ureter thus obviated.

6. The negative diagnosis is as accurate as the positive, when proper care is taken.

Technique. The patient for x ray examination of the urinary tract, should be given a cathartic several hours before the examination. This is done to eliminate fecal concretions and to minimize the number of exposures.

At the time of exposure, all clothing is removed from the part to be examined and the patient may then be covered with a thin sheet if necessary.

The patient lies upon his back, with the shoulders elevated and the knees flexed, thus to bring the kidneys as close to the plate as possible. This is most conveniently done by the aid of pillows and sandbags.

Some form of compression is always used to limit the motion of the



Fig. 1. No. 1. Calculi passed by Dr. G. No. 2. Calculus removed from kidney. No. 3. Calculus removed from left ureter. No. 4. Calculus removed from kidney. No. 5. Calculus removed from bladder. No. 6. Small uric acid calculi removed from ureter by the aid of the cystoscope. All these calculi were shown in skiagrams, except No. 6.

kidney, due to respiration. This is accomplished either by the abdominal binder, the compression diaphragm, or by instructing the patient to hold the breath. In the first examination two 11x14 plates are used. These plates carefully placed will give us pictures of the whole urinary tract. Following this examination, smaller plates are used with the compression diaphragm to more carefully examine smaller areas successively.

In this connection, I should like to say that the most valuable kidney plates are not usually beautiful as works of art, nor easily read by the inexperienced. They are not "photographs" of the kidney at all. They are records of relative density.

As more than half of the Roentgen technique depends upon the Crookes tube, it might be well to mention that the writer prefers a heavy self-regulating tube, neither too low nor too high in vacuum. The one I like best might be called by some a "seasoned tube." With such a tube, a good coil and a mercury turbine interrupter, we are able to get good tissue differentiation, and the exposure may vary from one to five minutes without change of vacuum, or danger to the patient.

The development is best done by the operator. Plates in which calculi are suspected should be developed with a rather dilute developer in order to increase the contrast between soft structures. This will necessarily prolong the time of development, but the results obtained are so satisfactory that the time is well spent.

The interpretation of the negative requires careful study and experience. I prefer to study the negatives in an illuminated box, looking at them from a distance with opera glasses, as suggested by Kummel. Robert Abbe¹⁷ remarks that to appreciate the meaning of skiagraphs requires as much experience as the technique of taking them. The most useful plates are often those which at first sight seem failures. A wet plate may show nothing, but when dry and held in proper light, may give good results.

In radiographic examination for stone errors are of two kinds:

POSITIVE ERRORS. By a positive error we mean radiographic diagnosis of the stone when none is present. They are as follows:

1. *Phleboliths*. These are usually bilaterally situated; the shadows cast are usually more definite, sharply defined and are smaller than ureteral calculi. In a measure they can be excluded by a picture taken with the aid of the ureteral bougie, as suggested by Fenwick, of London.

2. *Foreign Bodies in the Appendix*. Dodd and Osgood¹⁸ mention this possibility, and case 8, hereinafter reported, is an example. This error, however, can be eliminated by skiagraphing with the ureteral bougie *in situ*.

3. *Cheesy Deposits in the Calyces of the Kidney*. Also mentioned by Dodd and Osgood.¹⁸ Presumably these would only be caused by tuberculosis, and a bacteriologic examination of the urine might be of service.

4. *Scybalae or Fecal Concretions*. These can usually be eliminated

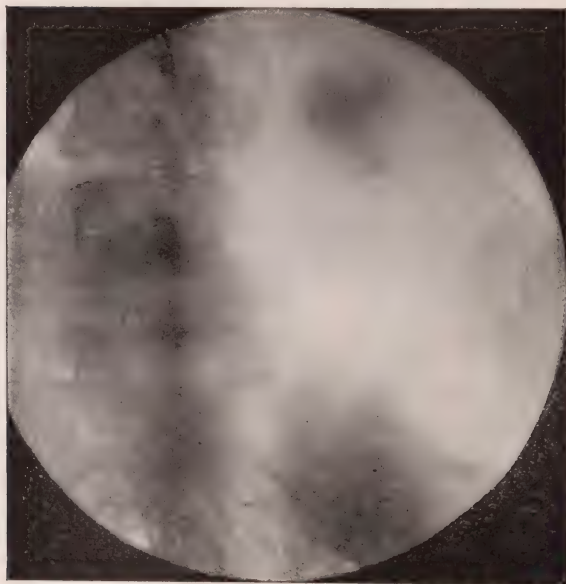


Fig. 2. Calculus in right kidney.

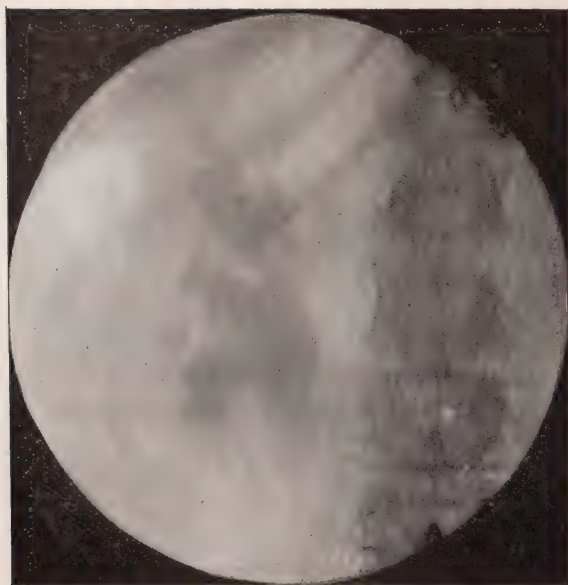


Fig. 3. Calculus in left kidney. Both Fig. 2 and Fig. 3 from the same patient.

by screen examination when they are displaced laterally by the peristaltic movements of the bowel, and by catharsis and a second examination.

5. *Small Bony Deposits in the Pelvic Ligaments.* Here again the bougie is of value.

6. *Calcified Lymph Glands Around the Lower Portion of the Ureter.* These also can be excluded by the ureteral bougie.

7. *Transverse Processes of the Vertebrae (Especially When the Outer End is Chalky) and Ossification in the Rib Cartilages as Mentioned by Albers-Schoenberg.* These can usually be eliminated by close inspection of the plate.

8. *Dense Masses of Fibrous Tissue as Mentioned by Riddle¹⁹ Who Cites a Case in Which an Operation had been Done Leaving a Thick Scar, Which Cast a Shadow Similar to Stone.* The history of any previous operation along the area to be examined should be taken into account. Practically this source of error is unimportant.

9. *Defects in Plates.*

10. *Atheromatous Conditions.*

11. *Drugs in the Intestine—Bismuth—(Baetjer).*

NEGATIVE ERRORS. By a negative error we mean a failure to make a radiographic diagnosis when stone is present. Among the causes are:

1. *Obesity.* Obesity increases the difficulty of getting shadows, but, unless extreme, it is not insuperable. The compression diaphragm is of great value in these cases. Case No. 9 of this series weighed 200 pounds.

2. *Uric Acid Stones.* This is practically nil as pure uric acid stones are rare. Urinary calculi usually contain enough of the opaque salts to cast shadows.

3. *Defects in Plates.* Excluded by close examination of the plate and a second examination.

4. *Imperfect Technique.*

To sum up the sources of error, one can readily see that they are mainly in the individual and not in the method.

To date I have examined by the Roentgen method fifty-five cases of suspected renal stone. Shadows indicative of stone were found in twenty-five. Of these, ten have been operated upon and the stones removed. An eleventh case was also operated upon and the concretion discovered to be in the appendix.

Of the twenty-five cases in which the Roentgenograms showed stones, the shadows were in the kidney alone in seven; the shadows were in the ureter alone in fifteen, and in the kidney and ureter in two.

In none of the cases were both kidneys involved. Shadows were found in both ureters in four cases. In one case there was a stone in the right kidney and one in the right ureter. In another case there was a stone in the left kidney and one in the right ureter.

In ten cases the stone shadows were multiple.

In one case, confirmed by operation, the symptoms were referred

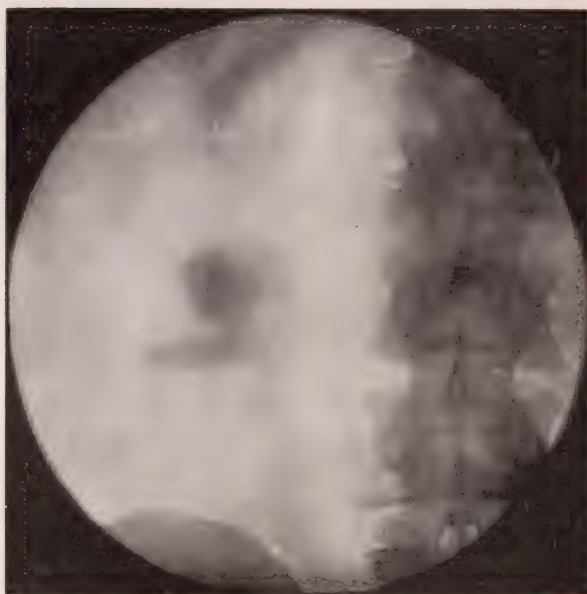


Fig. 4. Large calculus in left kidney.



Fig. 5. Large calculus in bladder.

to the side opposite to the one affected. Another similar case has not yet been operated upon.

Of the fifty-five cases examined no stones were found in thirty. Four of these were operated upon and other conditions than stone discovered, so that in the thirty negative cases no error has yet been demonstrated. Some of the interesting ones are as follows:

Case 1. Mr. H., age 43, attorney. Referred by Dr. Bransford Lewis. Complained of pain in left lumbar region. Six years ago there was a passage of sandy particles in urine. January, 1905, first of a series of similar attacks, which usually began as a dull aching in left abdominal region. After an hour of such aching the pain became sharp, extending down the left side into the bladder and left testis. Patient has had four such attacks. Urine showed some red blood cells. In October, 1905, under chloroform anesthesia, ureteral catheterization was attempted. Obstruction was met on both sides about one inch up the ureter.

Skiagrams showed two shadows in left ureter region and one in the right. The shadow on the right side was not in the ureter, as shown by ureteral catheterization, while on the left side the catheter coiled up in the bladder after meeting obstruction with the stones.

Case 2. Mr. B., age 25, salesman. Referred by Dr. Hugo Summa. Patient has been operated upon for appendicitis, post-operative hernia following. Present illness began last March, with pain in left lumbar region, extending into the groin and accompanied with chills, fever and vomiting. Duration nearly three weeks. Second attack in November with pain in left side radiating into glans penis. No chills or fever with this attack. Vomited once. Urine negative.

Skiagrams: Shadow in left uterer region, intrapelvic. Fourteen days after skiagraphy, and five days after medical treatment by Dr. Summa, patient passed a stone.

Case 3. Mrs. X., referred by Dr. Jesse S. Myer. First seen three years ago when patient complained of a dull, aching pain in the left side. The patient later consulted a Chicago physician who catheterized the ureters and said the kidneys were normal. Recently patient had an acute attack of la grippe. During this time patient complained of acute pain in left side. Urine: Red blood cells and a few leucocytes.

Skiagrams showed three shadows in left kidney region.

Operation, March 28, 1907. Three stones were removed from the left kidney pelvis, one fully as large as a pigeon's egg, very irregular in outline, showing here and there the mulberry type. Two smaller stones, about the size of peas, more regular in shape and of the mulberry type. Patient convalescent.

Case 4. Mr. F., age 54, merchant. Referred by Dr. G. M. Phillips. This patient had had four attacks of abdominal colic in the last three years. The pain was quite severe, extending into the left groin. Pa-

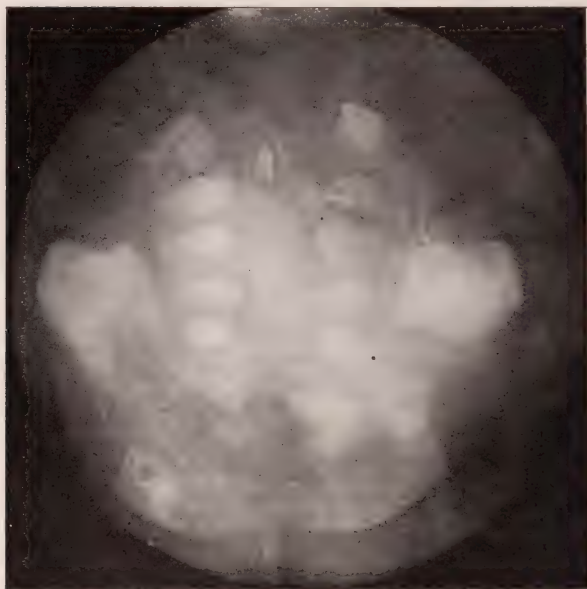


Fig. 6. Calculus in left ureter, about one inch from bladder.

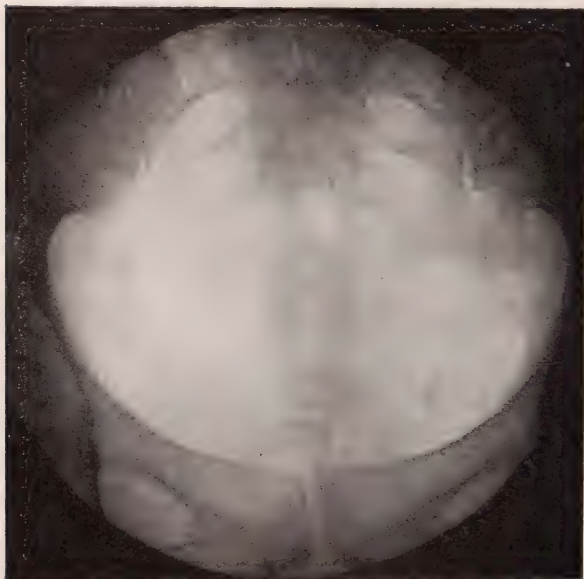


Fig. 7. Calculus in right ureter.

tient had chilly sensations, fever and some nausea, with each attack. Urine: acid, some red blood cells. No pus or albumin.

Skiagrams showed a shadow in left ureter region, intrapelvic.

Operation: Ureter was exposed retroperitoneally and on palpation a small mass was felt in the ureter within the pelvic cavity. The ureter was then followed as high as possible and nothing felt. Returning to where mass was found, nothing could be felt as before and ureter seemed clear. Dr. Phillips then washed the crumbled up stone from the bladder. This patient made a good recovery and has had no symptoms since.

Case 5. Mr. M., age 67, merchant. Referred by Dr. Jesse S. Myer, November 1, 1906. For about a year had had stomach trouble. In July began to notice pain which he located in the right lumbar and iliac region. The pain was deep, dull, aching in character and usually disappeared when the patient assumed a reclining posture. Urine: Acid, slight amount of albumin, very few red blood cells, numerous leucocytes, few casts.

Skiagrams showed a shadow in right kidney region and one in right ureter region, intrapelvic.

Operation February 15th, 1907. Kidney delivered, palpation of pelvis showed no stone. Incision through cortex revealed a mulberry stone, larger than a pea, which was removed. The ureter was then exposed retroperitoneally and a smooth stone about one half the size of a pea removed.

Case 6. Mr. F., age 45. Referred by Dr. Willard Bartlett. Abdominal trouble for five years. In June, 1902, appendix was removed with no relief of trouble. Patient still continued to have a dull, aching pain in the right abdomen, which was constant unless the patient was perfectly quiet. Some digestive trouble with occasional vomiting. Months of strict diet had not helped him, nor had rest and change of climate.

In April, 1906, skiagrams of the urinary tract gave a shadow in left ureter region, intrapelvic.

Operation April 25, 1906. A smooth round stone, about the size of a buckshot removed from the left ureter. May 8th, patient went home perfectly well and has had no symptoms since.

Case 7. Mr. H., aged 44, druggist. Referred by Dr. Willard Bartlett. Patient has had indefinite pain in abdomen for about three years. Fourteen months ago commenced to have attacks of abdominal colic in left side. These were exceedingly severe and were usually followed by blood in the urine.

Skiagrams showed a shadow in the left kidney and one in right ureter intrapelvic. Urine: Red blood cells and pus.

Operation October 27. Confirmed all shadows. November 10th, patient sitting up and ready to leave the hospital.

Case 8. Miss I., age 31, referred by Dr. M. G. Seelig, February 28, 1907. Present trouble began four months ago with pain in back and

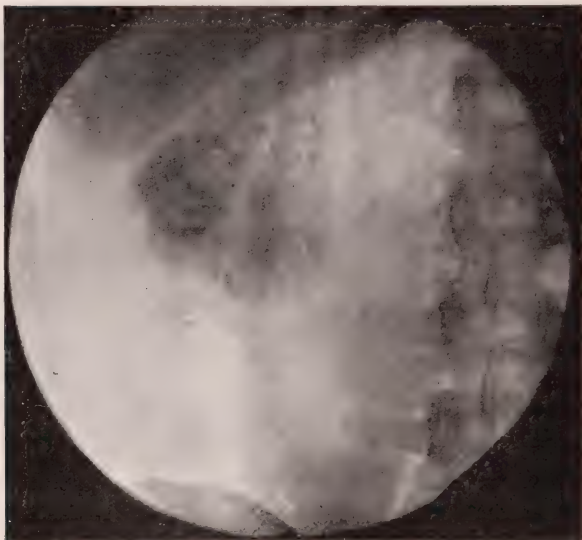


Fig. 8. Tuberculosis of left kidney, showing multiple phosphatic stones.

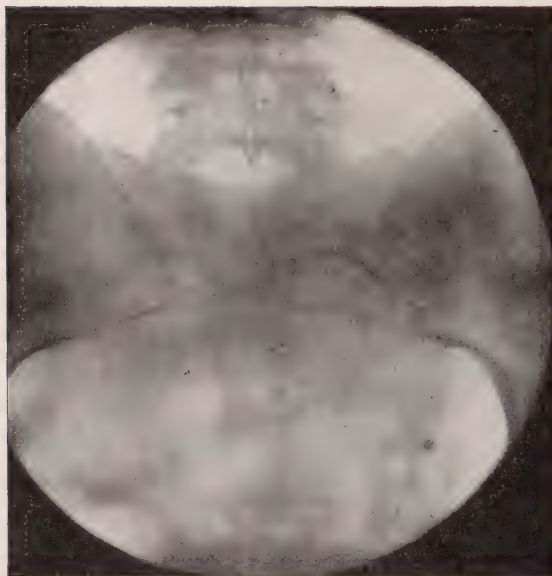


Fig. 9. Coprolith in the appendix simulating calculus in the ureter.

right lower abdominal quadrant. Patient noticed blood in the urine twice. A week ago had an acute attack resembling stone colic, patient fainting from pain. Cystoscopy showed normal ureteral orifices. Ureteral catheter entered left ureter and easily passed to kidney. In the right ureter progress of catheter was blocked about three inches from ureteral orifice. Urine: Negative.

Skiagrams showed a shadow in right ureter region intrapelvic. This observation was confirmed three times, the shadow, however, being two inches lower in the first plate than in all the others.

Operation: Extraperitoneal exposure of the ureter failed to locate ureteral stone. Small stone felt intraperitoneally which proved to be a coprolith in the appendix. The base of the appendix was adherent to the ureter. The coprolith consisted of a small organic seed as a nucleus with a mass of feces around it.

Skiagrams of this coprolith after removal gave a distinct shadow. Examination of patient after recovery showed an absence of the shadow.

Case 9. Mrs. B., age 41. Referred by Hugo Summa. Patient stout, weighing over 200. Abdomen thick and pendulous. For six months had had frequent attacks of pain in left side high up, radiating into gastric region, which led to a diagnosis of and treatment for stomach trouble by one of her physicians. Urine contained uric acid crystals; traces of albumin, discoverable only by Spiegler's test.

Skiagrams: After eight examinations a shadow was found in left ureter region, intrapelvic.

November 17, 1906, operation. Ureter was exposed retroperitoneally and a stone the size of a small bird-shot removed. December 5th patient went home to California and has had no symptoms since.

Case 10. Mr. R. Referred by Dr. Bransford Lewis. Trouble began five years ago with pain in left lumbar region, which was less severe in cold weather. This patient consulted six physicians and two osteopaths with no diagnosis or relief. Urine: Blood cells, calcium oxalate crystals. Cystoscopy and ureteral catheterization negative.

Skiagrams showed shadow in left kidney region.

Operation September 21, 1905. The stone was in renal pelvis, was about the size of a large pea, and had the color and appearance of a mulberry. Recovery uneventful and complete.

Case 11. Mr. H. P., age 43, salesman. January 20, 1907. Patient has complained of back for years. Two years ago had abdominal colic which lasted for about eighteen hours. Pain severe, requiring morphine. Chilly sensations and fever. No vomiting. In October, 1906, a second attack of abdominal colic, vomiting, no chills or fever; recovery in two weeks. Since this attack patient has been comparatively free from pain. Urine: Blood and calcium oxalate crystals.

Skiagrams of urinary tract show a shadow in left ureter region intrapelvic.

Dr. Lewis, with cystoscope in bladder, tried to pass a metal probe

up ureter to stone. The probe encountered a stricture at the ureteral opening so that efforts to pass it carried a loop of ureter up and to the inner side of stone.

Case 12. Mr. L. Referred by Dr. A. N. Curtis. Present trouble commenced eighteen months ago with sudden and severe pain in right lumbar region, extending into the groin and testicle. No chills, fever or vomiting. Six months later a second attack, less severe, lasting only a few hours. A month later was refused life insurance because of albumin in the urine. One month ago a third attack similar to the first. Urine: Albumin, red blood cells, pus and casts.

Skiagrams show a shadow in right kidney about the size of a hazel nut.

Operation: A single stone of the size indicated, rather rough, of the mulberry type, was removed from the kidney pelvis.

Conclusions. 1. The accurate diagnosis of kidney or ureteral stone is possible by the Roentgen ray only.

2. Clinical symptoms alone are insufficient to determine the presence or absence of kidney stone, their number, size or location.

3. Every suspected case of stone should be radiographed.

4. The radiographic examination should yield a definite result.

5. The interpretation of the plate is as important as the making of it.

6. The causes assigned for radiographic errors are, for the most part, not insuperable. There are few that cannot be overcome by improvement in technique, by perseverance and by experience.

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A ROENTGENOLOGICAL DISCUSSION OF BONE LESIONS.

By EDWARD HOLMAN SKINNER, M. D., of Kansas City, Missouri.

It is not only my aim to discuss the roentgenological findings in the diagnosis of bone lesions but also to impress upon the general practitioner and surgeon the wonderful help that the roentgen ray will render in this diagnostic field.

In presenting a study of bone lesions, it becomes necessary to correct some of the earlier impressions of the profession in regard to the ability of the roentgen ray to record tissues on the emulsion plate. Where formerly the surgeon employed the roentgen ray operator only for fracture work and received the word of the x ray man that the bone was fractured at such and such a place and the displacement graphically drawn on paper but the plate never shown as it was "inadvertently dropped in the dark-room, film side down;" that was about all the satisfaction that the surgeon received and even if the plate was exhibited it was nothing more than a shadow picture of the parts. But at this time such work will not satisfy the surgeon or the Roentgen consultant.

We must understand that the ray penetrates all substances in varying degrees. That the roentgen plate is a record of density and not a shadowgraph. When the earlier tubes were used the negative did simulate more closely the silhouette or shadowgraph but now the use of more perfectly adjusted tubes and apparatus has given us what we really desire—a record of the density and therefore the detail of the tissues interposed between the tube and the emulsion on the sensitized plate.

We all realize that the methods of diagnosis are valuable in direct proportion to the technic and experience of the diagnostician. The roentgen plate must be interpreted after exposure to be of value. Unless the surgeon has acquired special knowledge of the interpretation of densities, he cannot correctly translate the roentgenogram and is sometimes incapable of appreciating the refinement of the diagnosis that the roentgenologist can give, providing that to his ability as a practical x-ray operator he adds the knowledge of clinical pathology and diagnosis. The satisfactory results of radiographic diagnosis depend therefore on expertness in technic and experience in clinical interpretation of the roentgenographic detail. The physician applying to the roentgen consultant should understand and also let the patient know that he is not applying to the roentgenologist for a picture of the lesion but is applying to the roentgenologist for his diagnostic conclusions after the necessary negatives have been made. I desire to quote from Willey of Michigan University: "Though he be an enthusiast, the roentgenologist should scrupulously avoid making hasty examinations and conclusions, extravagant claims or of making a positive diagnosis from his plates except when absolutely justified in doing so. It is better to err on the side of conservatism than to shake the faith of his colleagues by pre-

mature conclusions. There should be a united effort on the part of the roentgenologists to give to the medical profession an accurate knowledge of the use of the roentgen rays and to keep the work within the boundaries of its legitimate field."



Fig. 1 shows necrotic area in humerus.

The technic of roentgenology has developed and is developing to a high degree of efficiency in its application to all departments of medicine and surgery. The roentgenographer must not merely be a photographer but possessed of sufficient diagnostic acumen to become the consultant of the physician and surgeon. And it is only when plates are made and interpreted by such roentgenologists that the hesitating surgeon will

be prone to send cases for a roentgen diagnosis with confidence in the ability of the roentgenologist to render value received. The clinical history of the case must be considered by the roentgenologist to the same extent that the microscopist considers clinical symptoms in a blood diagnosis. The practical and scientific and legal value of the roentgenogram cannot be overlooked by the surgeon.

In line with the subject of my paper, I desire to first call your attention to the roentgenological diagnosis of syphilitic bone lesions and the pathological diagnosis of the same in a few negatives. The bone tis-



Fig. 2 shows a proliferating periostitis; non-specific.

sues are more frequently involved in the tertiary stage—the stage which has developed after the patient has often forgotten the initial symptoms and comes to the physician with a faulty history that makes the absolute diagnosis impossible without the aid of objective methods of diagnosis. The roentgen ray here becomes a practical aid to the physician. We frequently find gumma of the bone periosteal or subperiosteal in origin with the swelling of the peripheral tissues and the thickened periosteum covering same being somewhat irregular in outline. As the gummatous process continues we may have the degeneration and resorption of bone tissue, producing a honey-combing of the bone about

the syphilitic sequestra. The detail of such processes may be demonstrated on the roentgen plate readily. The osteoporosis frequently escapes the diagnostician as only the irregular outlines of the bone involvement would be palpable. The earlier pathological steps in syphilitic bone lesions do not present the startling bone decay but the

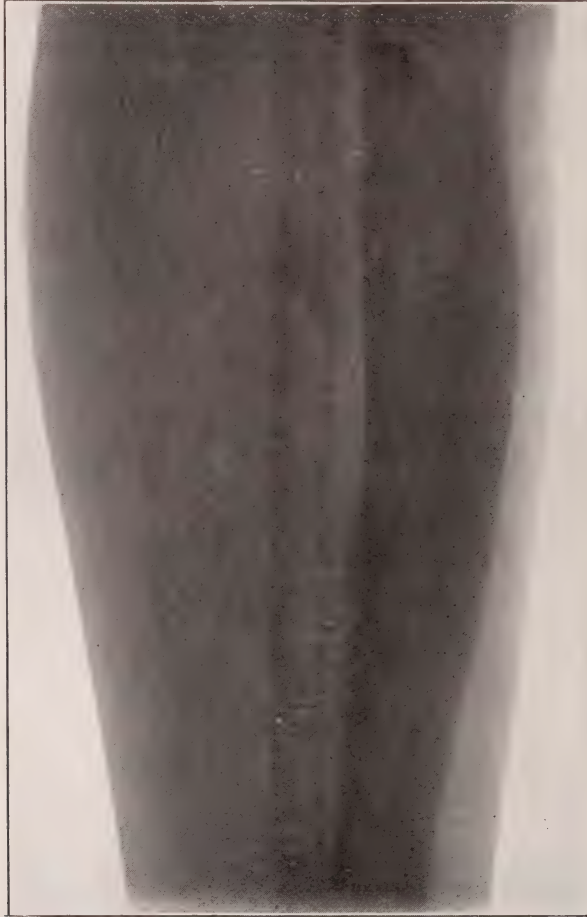


Fig. 3 shows a typical syphilitic tibia; this shows the gummatous thickening of the anterior portion of the bone and the periosteum.

diagnostic negative will show the thickening of the bone periphery, periosteal thickening and formation of osteophytic spurs on the under surface of the periosteum. The differential diagnosis of syphilitic bone involvement and osteomyelitis is cleared up considerably by taking diagnostic roentgenograms of both sides of body or limbs. Syphilis gives us the bilateral involvement and follows the pathological course as outlined above. The osteomyelitis is usually within the medula of the bone with a rarifying process in the surrounding tissues rather than the cortical thickening and tissue sclerosis of the syphilitic lesion.

Osteosarcoma would only be confounded where the syphilitic condition was confluent and of great porosity. Osteosarcoma gives us such rapid bone overgrowth with unilateral involvement only.

In taking roentgenograms of bone disease it is well to make exposures of the corresponding portions of the body for comparison. The parts should be taken with identical technic as regards tube vacuum and distance and position of part on plate to avoid errors of distortion and ray penetration. If the two parts can be placed on the same plate, it is better. This is easily accomplished in extremity work.



Fig. 4 shows the absorption of the bone salts in the carpal and metacarpal bones, following an interference with the circulation from a faulty healing of a Colle's fracture. The trophic disturbance of the hand affects the flesh of the hand also.

Tubercular bone lesions show up as light spots in the negative on account of the softening of the bone tissues. The process being one of bone degeneration, the extension of the process could be determined by successive exposures. The gradual absorption of the bone salts and the increase of the size and outline of the bone will display itself on the negative. The tendency of the tubercular process to burrow into the soft parts will afford us the opportunity of showing the outlines of such extensions. As an example of the latter we might cite the diagnosis of the psoas abscess as a complication of Pott's disease. The cheesy mass of the tubercular process shows up denser than the surrounding tissues. There is also a rarified condition of the bone surrounding the diseased process. I shall only mention at this time the value of the roentgen ray

in the diagnosis of tubercular conditions of the hip and other joints. And it is not necessary to wait for the extensive involvement of the joint in order to record it on the plate. The hip-joint is not the *bete-noir* of the roentgenologist as it was before the introduction of the compression cone diaphragm and the tube with high penetration.

Periosteal lesions will usually show a bulging of the outline of the periosteum in the acute inflammatory conditions and if there is developed an ossifying process on the inner surface of the periosteum this



Fig. 5. Non-union of tibia. Necrotic area with sequestrum internal to shaft.

condition will display itself on the plate with the irregular bone overgrowth and consequent abnormal ridging of the periosteum.

The osteomyelitis lesion will show as an abnormal density in the bone tissues from the increased blood to the parts, and with the subsequent breaking down of the bone we have the negative displaying the lack of bone structure and the formation of the sequestrum. The accompanying inflammation of the periosteum and tissues about the bone and the formation of nature's wall about the sequestrum will show up on the roentgen plate and be of unmistakable value in the totality of the symptoms that make the correct diagnosis.

The location of the necrotic areas and sequestra by the roentgen method is of the greatest assistance to the surgeon before operating as the ray will determine the number of sequestra with their relation to the surrounding parts.

The more rarer lesions of the osseous system such as osteomalacia, acromegaly, leprosy and cretinism are able to be displayed on the roentgen plate according to their various pathological findings. The osteomalacia will show an increased transparency on the roentgen plate with the thickening and distortion of this condition that ensues from the increased vascularity and absorption of bone salts. Acromegaly will dis-



Fig. 6. Absorption of bone salts from trophic disturbance, following a crushing injury of instep.

play the hypertrophic bone overgrowth in the epiphyses of the long bones with the same process in the bones of the skull and lower jaw. The clinical history of this class of cases will be necessary to make the roentgen ray valuable. Usually the clinical diagnosis of these conditions in the advanced stages is so apparent that it is only in the obscure early stages that the roentgen consultant will be sought.

Sarcoma of the bone tissues when of dimensions that present deformities are easily displayed on the roentgen negative. The value of the negative becomes enhanced by the ability of the plate to determine whether it be of periosteal or medullary origin. The early medullary

type shows up as a light spot in the negative which increases in size on observation but does not become multiple as in an osteomyelitic or syphilitic lesion. The periosteal type will gradually encircle the bone and present the pathological growth on the negative.

The application of the ray in the diagnosis of deformities is of apparent value. The exact adaptation of the spinal column deformities to the flat



Fig. 7. Same case as Fig. 6, showing obliteration of joint-spaces from an inflammatory arthritis, traumatic in origin.

glass negative is of difficulty and therefore the bone detail is faulty although the bone outlines may be displayed. I believe that the use of sensitized film made up in a large sheet would be of great value on account of its ability to conform to the deformity of the parts. Such film has been used in elbow work. I have never seen any mention of its use in deformities of the spine but believe that it is practical.

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THE X-RAY TREATMENT OF LEUCEMIA.*

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I desire to submit a very brief summary of three cases of myelogenous leucemia, treated by means of the x rays.

Case I. C. O., white, male, aged 41, came to the Washington University Hospital Medical Clinic May 17, 1906. The case was studied and most of the blood counts made by Dr. W. H. Rush. His family and previous history were without significance. For about two years he had observed a mass in the left half of the abdomen slowly increasing in size and during this time he had lost in weight and strength. More or less pronounced dyspeptic symptoms had set in, together with dyspnoea, cardiac palpitation, a harrassing cough, night sweats, cramping pain in arms and legs and impaired vision. For some months he had been quite unable to work. When the patient presented himself, he was pale, emaciated and evidently very weak. He had no fever and weighed 134 pounds. The physical examination, in a word, showed the signs of a high diaphragm, a soft systolic murmur at the apex of the heart and an enormous spleen extending from the eighth rib in the left axillary line to the crest of the ilium, filling the entire left half of the abdomen and extending over 5 centimeters to the right of the umbilicus. The blood count showed 50 per cent. hemoglobin, 2,048,000 red cells and 507,500 white cells distributed as follows:

Polymorphonuclear neutrophils	47.2	per cent.
Polymorphonuclear eosinophils	1.7	" "
Lymphocytes	3.5	" "
Large mononuclears	0.3	" "
Mast cells	9.2	" "
Myelocytes	38.1	" "

One megakaryoblast and many normoblasts were found.

The sputum contained no tubercle bacilli, the urine a trace of albumen and a few casts. As the patient had already undergone a thorough course of medicinal treatment, a series of x ray exposures was at once begun and at the same time Fowler's sol. was given by mouth. The splenic area was exposed to a moderately hard tube three to four times weekly for ten treatments. Then, owing to the appearance of a dermatitis, the sittings were interrupted for a few weeks and resumed when the dermatitis had disappeared. The x ray treatment was in charge of Dr. H. P. Wells. The patient's improvement was rapid and steady. Five days after beginning treatment the red blood count had risen to 3,382,000 and the leucocyte count had dropped to 370,000 with 34 per cent. myelocytes. A week later the leucocyte count was 270,000 and on June 8, 154,000. Meanwhile the patient improved subjectively in every way and the bronchitis cleared up. On June 18, when the patient had resumed his work as a driver, the hemoglobin was 55%, the red count 3,750,000 and the white 57,850. On July 6, his weight had increased to 140 pounds. his hemoglobin was 75%, with over 4,000,000 red cells, and 71,900

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leucocytes. His spleen had shrunk to one centimeter below the level of the umbilicus. Except for some desquamation and pigmentation, the skin over the spleen showed no ill effects from the treatment. In August he reported himself at work and feeling well. His weight was 144 pounds, hemoglobin 70%, red cells 4,800,000, white cells 12,000 with 2.7 per cent. myelocytes, the normal neutrophils having risen to 79.9 per cent. His spleen extended only to 5 cm. above the level of the umbilicus. He continued to gain in weight and strength, the blood picture showing insignificant fluctuations and his spleen steadily shrinking. Thus in February, 1907, he was feeling and looking perfectly well, weighed 160 pounds; the spleen extended only 2 cm. below the costal margin, while his blood showed 80% hemoglobin, 4,770,000 red cells and 19,800 white cells with 2.2 per cent. myelocytes. In April he weighed 170 pounds, but no blood count was made at that time. Thereafter he continued to feel well subjectively but lost a little ground objectively during the summer. The x ray treatment was discontinued in June and the patient was not again seen until March 27, 1908. He seemed a little weaker but, on the whole, felt well. His spleen extended from the sixth rib about an inch beyond the navel. His blood contained 4,340,000 reds, 75% hemoglobin and 134,000 whites with 36% myelocytes. A relapse is evidently in progress for which he is planning to take another course of x ray treatment.

Case II. C. C., male negro, aged 19, entered the Washington University Hospital March 25, 1907. His family and past history were without special significance, in particular there is no record of any hemophilia among his relatives. He believed himself to have been well until July, 1906, when after the extraction of a molar tooth he bled profusely and nearly constantly for nine days. His prostration was extreme and it was three months before he was able to return to his work as a laborer. Two months later he went through what was apparently a severe attack of acute articular rheumatism, which has recurred at intervals ever since and has incapacitated him from work. Some three weeks before entering the hospital he awoke one morning to find his penis in a state of extreme erection and very painful when handled. Perhaps as a result of manipulation the priapism grew worse and a bloody urethral discharge appeared. Otherwise he continued to feel well in every way. When first seen he appeared rather emaciated, weighing 130 pounds, mucous membranes pale, with an intermittent fever ranging from 97.6° to 101°. His thorax was normal except for the results of a high diaphragm. The abdomen was somewhat distended, the spleen extending from the seventh rib in the anterior axillary line not quite to the level of the umbilicus. The liver was not palpable and only a few bullet-like post-cervical lymph nodes indurated. The penis was in a state of extreme erection, the largest I have ever seen, extending to the umbilicus when laid upon the abdomen. Its length was 16 cm. and its greatest circumference 11.5 cm. It was very tender to manipulation and at intervals a trickle of blood oozed from the meatus. A soft swelling in the

perineum simulated the presence there of a pus collection. The blood count showed 580,000 white cells distributed as follows:

Polymorphonuclear neutrophils	.....46.8	per cent.
Lymphocytes	.....1.6	" "
Large mononuclears	.....0.4	" "
Eosinophils	.....4.4	" "
Mast cells	.....6.0	" "
Myelocytes	.....37.6	" "
Normoblasts	.....many.	

A course of x ray treatment was at once inaugurated and the patient was given calcium carbonate 5i by mouth and every four hours. The urethral bleeding, the priapism and the perineal swelling promptly disappeared, so that the patient again felt practically well. The blood picture, however, underwent no change. In view of the known resistance of negroes to x ray burns, excessive exposures were tried. The region of the spleen as well as the long bones were exposed daily to a moderately hard tube at a distance of 10 cm. for from 10 to 17 minutes. There were no ill effects of any kind, but the blood picture was not essentially influenced. After five weeks of this treatment the x rays were discontinued and arsenic given in various ways: Fowler's solution and sodium cacodylate by mouth and atoxyl hypodermically and intravenously, all without avail. Finally towards the end of May the patient left for his home in southern Missouri with a leucocyte count of 485,000 and 40 per cent. myelocytes, the spleen as large as ever but feeling well subjectively. He has not been heard from directly since that time, but an acquaintance states that he was apparently in fairly good health until August, 1907. A rapidly progressive dropsy then ended in his death. There had been in the interval neither hemorrhage nor priapism.

Case III. J. W., white male, aged 38, was first seen on September 23, 1905. His family and past history were without significance. For six months he had been losing weight and strength and had been complaining of pain beneath both scapulae. Of late there had been some digestive disturbance, and, for a month, severe night sweats. There had been no cough and no hemoptysis. For about three weeks the sexual appetite had been failing. The patient appeared pale and languid, with a temperature of 99.6, pulse 96 and weight 143 pounds, a loss of 31 pounds in ten months. His physician had told him he had consumption and had ordered him west. The physical examination, in a word, showed a suspicious right apex and a hard spleen extending just beyond the navel. There was no lymphatic tumefaction. A blood spread showed typical myelogenous leucemia and he was told to return for further examination. He was not, however, seen again until April 14, 1906. He had been holding his own subjectively but his spleen had greatly enlarged extending from the sixth rib in the mamillary line to Poupart's ligament and from the right flank to a point 6 cm. beyond the middle line. His blood contained 65 per cent. hemoglobin, 3,850,000 red cells and 350,000 leucocytes distributed as follows:

Polymorphonuclear neutrophils	.....52.6	per cent.
Myelocytes	.....40.8	" "

Lymphocytes	2.7 per cent.
Large mononuclears	2.6 " "
Eosinophils	1.3 " "
Mast cells	none found.
Normoblasts	many.

The patient went to Eureka Springs, Ark., where Dr. C. F. Ellis gave him a course of x ray exposures. During his two months' residence there he received 53 exposures of ten minutes each over the splenic area. His spleen began to shrink after the fourth exposure and the patient rapidly gained in weight and strength. No medication was used, except once for an intercurrent diarrhoea. When seen again in July, he felt and looked well. His spleen extended barely to the umbilicus and his blood contained 88 per cent. hemoglobin and 14,800 leucocytes, with 12 per cent. myelocytes. He returned to his work as a foreman in a factory and continued to improve under moderate doses of Fowler's solution. In August, 1906, he felt absolutely well, weighed 147 pounds and the spleen was barely palpable under the costal margin. His red blood count was 5,940,000, hemoglobin 80% and leucocytes 9,480 with 1.4 per cent. myelocytes. Thereafter he continued to feel well and his weight increased to 157 pounds, but his leucocyte count and the splenic tumor increased. In December, 1906, with a leucocytosis of 44,600 and a spleen extending to the level of the umbilicus, he was again subjected to a course of x ray treatments, this time, however, without avail. In the course of ten weeks, he received 36 exposures over the spleen and the long bones, by a physician especially skilled in this work. When in March, 1907, the treatment was discontinued, he felt much weaker, though he weighed 156 pounds. His blood contained 142,000 leucocytes with 21 per cent. myelocytes and his spleen extended well below the level of the umbilicus. During the next three months he received Fowler's solution by the mouth or atoxyl hypodermically, but lost ground steadily. Towards the end of June, 1907, he had had to quit work and apparently had not long to live. His spleen again extended below the crest of the ilium, having a length of 32 cm. and a width of 24 cm. His blood contained 247,000 leucocytes with 37 per cent. of myelocytes. As a last resort, the x rays were again applied, but this time in excessive dosage. At first every day and later several times weekly, exposures were made to the region of the spleen, through a rubber sheet, with a hard tube at a distance of never over 10 cm. and a duration of from 15 to 20 minutes. Occasionally when a burn seemed impending, the treatment was discontinued for a week. No medication was given. To our surprise the improvement was prompt and rapid. His weight rose from 130 to 150 pounds, his strength increased correspondingly. The spleen steadily diminished in size until it barely extended below the level of the umbilicus. The white blood count fluctuated somewhat, but after July never rose above 70,000, being 18,200 in August with 10 per cent. myelocytes and 22,000 in October. From time to time, various accidents to the apparatus necessitated an interruption of the treatment. On each occasion the leucocyte count promptly rose but yielded again to a renewal of the treatment. In December, however, the exposures were definitely discontinued, with a leucocyte

count of 47,000. During the following month the patient held his own subjectively and objectively and towards the end of January, feeling strong and well, went to California to raise chickens.

This case presents a number of features of interest. The duration of the case is unusual, the patient being subjectively well and able to work nearly three years after the onset of his leucemia. Moreover, the fact that of the three courses of x ray treatment, to which the patient was subjected, the first and the last should have resulted in rapid and marked improvement, whereas the second was entirely unable to arrest the patient's change for the worse, is not easily explicable. As stated above, the second course of treatment was administered by a physician unusually skilled in x ray work. Perhaps the explanation is to be sought in the fact, that in the third series of exposures I used a very hard tube. Finally, the fact that during this third course of treatment, an x ray dosage, usually considered as never permissible, not only proved innocuous but definitely life saving, should be noted.

When Senn in 1903 reported the first case of leucemia apparently cured by means of the x ray, his announcement was received with great enthusiasm. Reports of similarly successful cases were soon reported in considerable numbers and it was believed that a cure for leucemia had at last been discovered. Unfortunately these sanguine expectations have not proven well founded. One after another, the cases thought to have been cured, relapsed and finally died, so that it seems established that in the x ray treatment of leucemia we have only a palliative, never a really curative agent. Nevertheless it is unquestionably our most potent therapeutic method in this disease. Arsenic, in spite of the occasional good results attending its administration cannot vie with it for a moment. While large statistics are not yet obtainable it would seem that in myelogenous leucemia, the x rays exert a favorable influence in about 90 per cent. of all cases. Often the improvement is striking. The patient becomes subjectively well, his fever ceases, he gains in weight and strength, the hemoglobin as well as the red and white corpuscle count become normal, the spleen shrinks astonishingly, indeed only the demonstration of a slight splenic tumor and of an occasional myelocyte in the blood may serve to remind us that the disease is only latent. Sooner or later, the inevitable relapse occurs and then the x rays usually prove far less effective than when first administered. The total duration of the disease is still usually less than one year, rarely more than two, but meanwhile the patient, instead of remaining a hopeless invalid, has had months of apparent health. In lymphatic leucemia, the x rays have proven far less effective than in the myelogenous type, though owing to its greater chronicity the average duration of life is still longer in the lymphatic than in the myelogenous form. Usually in lymphatic leucemia the blood remains but slightly affected by the treatment and only those lymph nodes that have been exposed to the direct action of the rays show any tendency to atrophy. Occasionally, however, results have been obtained rivaling those in myelogenous leucemia. At all events, even in lymphatic leucemia, the x ray treatment deserves a trial.

As regards technique, a few words may not be out of place. X ray

tubes are conveniently classified as hard, medium and soft, depending upon the degree of vacuum, the latter being higher in the hard and lower in the soft tubes. The vacuum in a tube is, however, by no means a constant factor. Ordinarily it grows steadily higher with constant use, possibly because the molecules of the rarified air are flung from the cathode with such force as to become closely adherent to the glass walls of the tube. If the tube is not given sufficient rest or if other precautions are not taken, the vacuum ultimately becomes so high that no current will pass and the tube becomes useless. Some tubes are provided with special appliances whereby the vacuum can be lowered. Cheaper tubes may be rendered softer by baking, by reversing the current or by more or less prolonged rest. Sometimes, on the other hand, either on account of a perforation or from other causes not well understood, the vacuum in a tube may suddenly fall so low that x rays are no longer given off. It must be re-exhausted. Other accidents such as perforation of the anode may be avoided by interrupting the exposure every few minutes, thus giving the anode time to cool.

The nature of the rays given off by a tube varies with its hardness. Soft tubes produce rays that are most effective therapeutically but on the other hand are most apt to produce burns and have but feeble penetrative power. The rays from a hard tube have great penetrative power and are comparatively innocuous but unfortunately are not very effective therapeutically. The hardness or softness of a tube may be conveniently estimated by examining the shadow of the hand or elbow with a fluoroscope. With a soft tube both bones and soft parts appear opaque, with a medium tube the bones appear dark but the flesh pale, with a hard tube bones and flesh both appear translucent. For superficial work rather soft tubes are coming more and more into favor, but for treating deeper tissues as in leucemia, moderately hard tubes are most useful. Occasionally, as in my third case, where the ordinary tubes fail to produce the desired effect, a decidedly hard tube may be more efficient. For reasons not yet understood, certain individual tubes may combine considerable penetrative with great therapeutic power and when a roentgenologist comes into possession of such a tube he guards it as the apple of his eye.

There is as yet no general agreement regarding the mode of application of the x rays in leucemia. Some advocate few prolonged exposures, others many shorter ones. Some expose once or twice weekly, others daily. On the whole, however, it may be said that the average course of x ray treatment for leucemia consists of a total exposure of from 300 to 500 minutes. The distance of the anode from the skin is usually kept at from 20 to 40 centimeters, but occasionally, in refractory cases, I believe that one is justified in reducing the distance to 10 centimeters, in spite of the increased risk of burns.

This brings me to the dangers connected with the use of the x rays, which must not be underestimated. The commonest accident is the occurrence of the well known x ray burns which may range from a mere desquamation to deep ulcerations that show little tendency to heal. Ordinarily, these burns are due to carelessness or inexperience on the part

of the operator, but they do sometimes occur unexpectedly in spite of careful work and the dread of thus injuring his patient, not to speak of resulting damage suits, is a sword of Damocles continually hanging over the head of the roentgenologist. The risk of causing burns is somewhat diminished, though not obviated, by covering the skin with some substance that obstructs the passage of the softest rays. Bruce suggests linen, Maragliano diachylon plaster; v. Jaksch uses thin plates of silver while I have found, at Dr. H. P. Wells's suggestion, the use of a rubber sheet very satisfactory.

Another danger to the patient is the occurrence of a peculiar type of nephritis, especially after a long series of exposures such as are needed in leucemia. At one time it was hoped that this complication could be avoided if the kidneys were protected from the rays by means of sheet lead, but unfortunately this seems not to be the case. The nephritis is apparently due to the production in the body, after long-continued exposure to the x ray, of toxins whose nature is not understood. As yet we know of no means of avoiding this accident and in the treatment of so grave a disease as leucemia, its occurrence must simply be risked.

Finally it has been found that an overdose of the rays may lead to an atrophy of the bone-marrow, for reasons that will be discussed later. A considerable number of cases have been reported in which the patient after considerable initial improvement suddenly does very badly. The fever which had ceased after the first few applications, suddenly returns, the patient becomes very feeble and a severe anemia, which may bear all the ear-marks of a pernicious anemia, sets in. Sometimes, if the treatment is discontinued, the patient slowly recovers, but sometimes death ensues either from an intercurrent infection or from progressive weakness. In an interesting case reported two years ago by Flesch, a myelogenous leucemia, after yielding readily to the treatment, was succeeded by an acutely fatal lymphatic leucemia. Pancoast and Stengel point out that where the leucocyte count falls very rapidly during the treatment, great caution should be exercised for fear of irreparable injury to the bone-marrow and certainly, when the blood picture has become nearly normal, the treatment must be discontinued for the same reason. It is probably not good therapeutics to try to prevent relapses by means of a continuance of the x ray exposures. It is safer to wait for a recurrence before resuming the treatment.

A discussion of x ray accidents would be very one-sided without a word concerning dangers to the operator himself. I need only refer to the frequent occurrence among x ray operators of burns, atrophies, multiple carcinomata, sterility, injury to the eyes and the like. No one should work with the x rays without being well protected by means of screens, gloves, aprons and lead glass. Our characteristic American recklessness leads us to dispense with adequate personal protection far more frequently than is usual abroad, and so long as this carelessness continues, the present frequent occurrence of injury to x ray workers will not grow less.

In spite of much experimental work, our knowledge of the changes that take place in the leucemic organism under the influence of the x rays

is still incomplete. Heineke was the first to approach the problem from the side of animal experiment. He exposed small animals to the prolonged action of the x rays and found that the leucocytes in the circulating blood diminished rapidly, the lymphocytes disappearing first and the granulated cells later, until finally the blood no longer contained any white corpuscles. At the autopsy, he found nearly complete necrosis of the blood-producing tissues and concluded that the leucopenia was produced by a destruction of these organs. Linser and Helber, however, were able to show that this conclusion was erroneous. They found that at a time when the white corpuscles had nearly disappeared from the circulation, the bone-marrow was still practically intact, the destruction of the bone-marrow occurring only if the experiment was carried on still further. In an interesting series of observations they tried to show that the x rays produce in the blood a so-called leucolytic substance which directly destroys the white corpuscles. If an emulsion of leucocytes obtained either from the blood or from an aseptic purulent exudate was exposed to the action of the x rays and then injected into an animal of the same species, a leucopenia resulted, whereas the untreated leucocytes caused a leucocytosis. Similarly, the serum from an untreated animal injected into another of the same species caused a leucocytosis, but if the first animal had been exposed to the x rays, a leucopenia resulted. They concluded that the x rays by their direct action upon white corpuscles produced a leucolytic ferment and that this ferment like other similar ones could be inactivated by heat and could be made to produce its own antitoxin. Milchner and Wolff repeated these experiments in somewhat greater detail with similar results. Hoffmann added to the blood of an untreated case of leucemia some serum from a case that had been greatly improved by means of the x rays and observed a rapid disintegration of the white corpuscles, while Curschmann observed in rabbits a temporary diminution in the number of white corpuscles when the serum of an x rayed leucemic was injected. This failed, however, to occur when the serum of an untreated case was used. In this country Capps and Smith made experiments along similar lines with the same result. They also injected into an untreated leucemic patient, blood-serum from another individual who had been successfully treated by means of the x ray. After each injection, a rapid and considerable fall in the leucocyte count was observed, indicating to their minds that the serum of the x rayed patient contained a specific leucocyte-destroying substance due to the action on his blood of the x rays.

Unfortunately none of these observations are conclusive. In the first place none of these observers report more than very few experiments in any one direction, so that accident or errors of observation cannot be entirely excluded. Thus when they obtain a destructive action upon white corpuscles in vitro by means of the x rays or of the serum of x rayed animals or human beings, they do not speak of any precautions taken against bacterial contamination. It is, however, well known that certain widely prevalent bacteria, such as the bacillus subtilis, destroy leucocyte emulsions in a test-tube very rapidly. Again, their experiments on rabbits are vitiated by the fact that for physical reasons the leucocyte

count in the peripheral blood of rabbits varies widely from hour to hour. Finally, the observations of Capps and Smith, that the serum of an x rayed leucemic patient injected into an untreated leucemic individual produced a rapid if temporary fall in the leucocytosis, has no significance so long as we do not know the effect upon such an individual of injections of normal or of untreated leucemic blood. It is, therefore, not surprising that Klieneberger and Zoeppritz, in a much more careful and extensive series of observations than those of their predecessors came to a diametrically different conclusion. Neither in the test-tube nor in animal experiment were they able to find that the blood-serum of x rayed animals nor that of leucemic patients so treated had any leucolytic power whatever. And there the matter rests at present.

A much more profound insight into the metabolism of leucemic patients under the influence of the x rays has been made possible by careful study of their urines. Koeniger, Rosenberger, Rosenstein and Gualdi, who have done the best work along these lines, have made nearly identical observations. It will be remembered that the uric acid and the purin bodies in the urine are apparently formed mainly from the breaking down of nuclear substance. In leucemia these substances are excreted in excessive amount, evidently because of the great number of leucocytes, rich in nuclear matter, that are continually breaking down. When the x ray treatment is begun in a case of leucemia and the white corpuscles in the blood begin to diminish considerably, there is at first a marked rise in the amount of uric acid and of the purin bodies in the urine. This is evidently due to a great destruction of leucocytes. As, however, the leucocytosis diminishes still further, the excretion of uric acid and of the purin bodies approaches the normal and when the patient has been nearly or apparently quite cured, an abnormally small amount of these substances is excreted in the urine. The natural interpretation of these results is that at first the x rays exert a destructive action upon the leucocytes in the circulation either directly or by means of a leucolytic ferment or in some manner not yet known. Later, however, this action upon the blood itself ceases and is replaced by an inhibitory action upon the bone marrow apparently due to the formation of a myelotoxic substance in the blood, since this effect occurs even when the bones themselves are protected from the direct action of the rays. This theory is rendered the more seductive by the fact that both in animals and in leucemic patients an excessive dosage of the rays has been followed by bone-marrow atrophy. As yet, however, the evidence in favor of this interpretation of the action of the rays upon leucemic blood rests upon purely circumstantial evidence. The direct evidence in favor of the existence of either leucolytic or myelotoxic substances in the blood of these patients is not yet conclusive.

THE USE OF THE X RAY IN GASTRIC DIAGNOSIS.

By HORACE W. SOPER, M. D., of St. Louis.

In order to comprehend the method of examination by means of the Röntgen Ray, we must remember the law that substances of like atomic weight and thickness cast the same shadow; that for example, the lungs are visible because they are surrounded by tissues that naturally differ from them in density.

In as much as the gastrointestinal tract including the oesophagus is bordered by structures of much the same density, it can only be made visible by introducing some substance which has either a much higher or lower specific gravity. The agents usually employed for this purpose are air and bismuth, either the metal or the subnitrate.

In 1896, Wegele¹ closely followed by Lindemann² and G. Rosenfeld, succeeded in examining the stomach by means of x rayed sounds. Then Boas and Levy Dorn administered bismuth capsules. Rosenfeld⁴ outlined the air inflated stomach. Holzkecht⁵ in the year 1900 published his great work on "Testing the Functions of the Oesophagus by Means of the Bismuth Bolus," a method by which the diagnosis of change in caliber, form and position of the oesophagus can be readily established.

Rieder⁶ was the first who had the courage to give large doses of bismuth subnitrate. He administered a large meal which completely filled the stomach, consisting of thirty to forty grams of the subnitrate intimately mixed with 400 cc. of finely ground rice or meal mush. The stomach can by this means be beautifully outlined.

Rieder employed only the radiographic or photographic method of examination. Holzkecht⁷ developed the radiosopic (fluoroscopic) method and opened up a whole world of diagnostic possibilities. By this method the x ray tube and the fluoroscopic screen are so adjusted as to utilize the parallel rays and at the same time to avoid any distortion of the shadow of the object. The shadow of the bismuth mush-filled stomach can thus be studied, and the effects of palpation, action of food, respiratory movements, abdominal contractions, peristalsis, etc., can be observed.

Rieder and Goldammer⁸ have advocated especially the radiographic method, and this is certainly of value where fine definitions are desired, and where by instantaneous exposure the stomach may be caught at a point in its peristaltic excursion, as in the beautiful picture shown by Rieder⁹ in his latest publication.

The great advantage of the fluoroscopic method is that by palpation, i. e. by moving the bismuth mass in various directions, the changes produced in the stomach can be observed directly under the eye of the operator. By strong contraction of the abdominal muscles (Bauchziehen Holzkecht) the stomach is elevated a distance varying from two to six inches. This is of especial value in determining the question of adhesions of the stomach with neighboring structures.

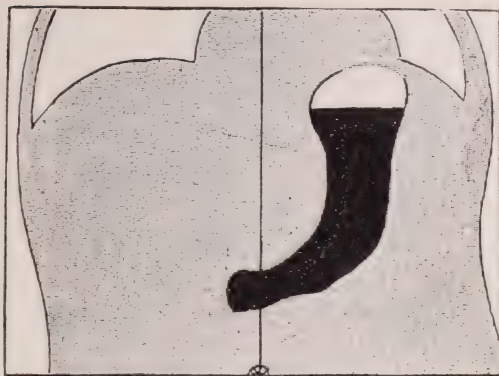


Fig. 1.—Holzknecht's normal form of stomach (erect posture).

Many observers have confirmed Holzknecht's researches, notably Groedel¹⁰ (3) of Nauheim, Jolasse,¹¹ Levin and Barrett,¹² and Hulst¹³ and Pfahler¹⁴ of this country.

Their results may be summed up as follows:

1st. The diagnosis of the relationship of the stomach to the abdominal walls, the diaphragm, the large intestine, liver, etc.

2nd. The study of the effects of massage, electricity and other stimuli upon peristalsis.

3rd. The motility, i. e. the time in which foods leave the stomach, has been studied chiefly by Jolasse¹¹ and Schwarz and Kreuzfuchs.¹⁵ Jolasse's results were, briefly, that after the administration of the bismuth meal, normally no shadow should be visible after three hours in males and four hours in females. Six hours after the Leube midday meal no food should be present.

4th. The differentiation between intra and extra ventricular tumors.

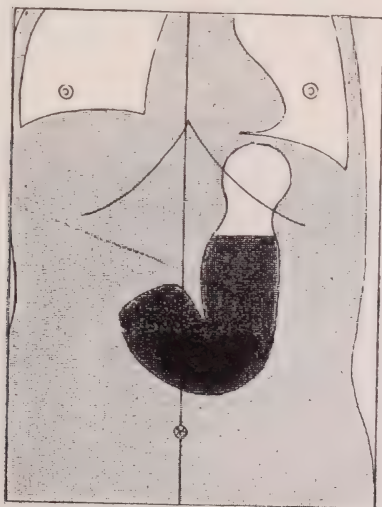


Fig. 2.—Holzknecht's usual or "fish-hook" form of stomach (erect posture).

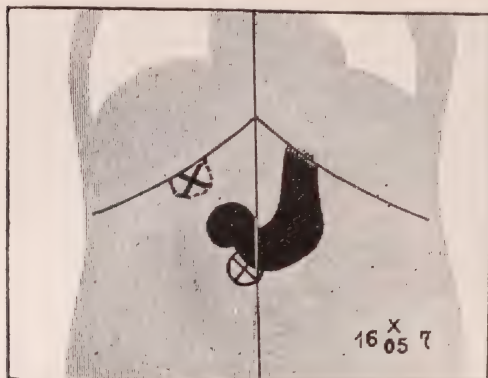


Fig. 3.—Upper x marks a tumor in the region of the gall bladder not connected with the stomach. The lower x indicates a second extra-ventricular growth. (Holzknecht.)

(Holzknecht.) It can be readily ascertained whether or not palpable epigastric tumors are connected with the stomach.

5th. The differential diagnosis between extra and intra ventricular localization of other clinical symptoms. For example: It is of value to know whether or not an area of localized pain or tenderness to pressure, is situated in the stomach.

6th. The diagnosis of growths encroaching upon the cavity of the stomach; this refers particularly to carcinoma. Should the growth project into the large air bubble, which is always visible in the cardiac portion of the stomach, it becomes distinctly outlined. In growths near the pylorus, the loss of peristalsis is a valuable sign of infiltration of the wall. Anti-peristalsis means pyloric-stenosis. Projections of the growth causing irregularities in the cavity are also of value. Quite often small nonpalpable growths become palpable under the x ray probably due to the concentration of the attention of the observer.

7th. The judgment of size, form and position of the stomach. This is studied chiefly with the patient in the erect posture. Rieder, Groedel and others maintain that the "fish-hook" or siphon form is the normal one.

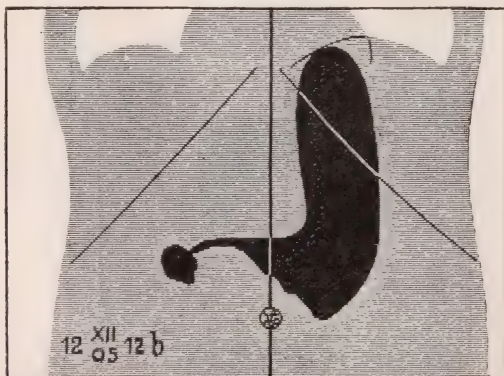


Fig. 4.—Carcinoma of the pyloric region. The tumor projecting into the cavity leaves but little space to be filled by the bismuth mixture. (Holzknecht.)

Holz-knecht found this same form in eighty per cent of the adults he examined, and terms it the usual one, corresponding to a certain degree of visceral ptosis, which occurs in this percentage of healthy persons. The normal type, which Hulst designated the "steerhorn form," Holz-knecht found in that small per cent (15-20) of persons with strong well developed abdominal muscles exhibiting no signs of ptosis. Pfahler of Philadelphia, ably supports this view.

Holz-knecht basing his judgment upon his original studies of the physiology of respiration concludes that the great majority of healthy adults exhibits a condition of moderate enteroptosis, the cause of which lies in a relaxation of the abdominal walls, producing changes in the intra abdominal pressure thus leading to a ptosis of the viscera. This in turn causes the narrowing and elongation of the thorax; in brief the well known clinical type designated by Stiller¹⁶ as *asthenia universalis congenita*, or *habitus enteroptoticus*, which has provoked so much discussion. It is interesting to note that Virchow¹⁷ as early as 1890 made practically the same statement, explaining it as a concomitant of the general muscular weakness or relaxation that the greater part of civilized mankind exhibits. Thus it appears that very early in life the stomach begins to gradually deviate from its seldom seen normal form, and assumes the fish-hook or siphon shape. As Holz-knecht emphasizes, this position of the stomach is not a genuine ptosis, but because of the fixation of the cardiac portion and the small degree of excursion permitted the pylorus, the condition is really one of suspension. That in severe grades of gastrop-tosis or "relaxatio ventriculi" (Holz-knecht), treatment directed towards elevating the ptotic small intestines, and thus restoring the cushion upon which the stomach normally rests, is the most efficacious: that under strong contraction of the abdominal muscles (*Baucheinziehen*) the stomach can be seen to assume the "steerhorn" or normal form.

8th. The observations of Hemmeter¹⁸ upon the precipitation of the bismuth in cases of gastric ulcer, have not been confirmed by other investigators. Schwarz's method of estimating the degree of acidity (H. Cl.) by means of connective tissue capsules containing bismuth has not been verified.

It therefore appears that the x ray, while not displacing other physical and chemical diagnostic methods, is an extremely valuable addition to our equipment.

Particularly in consideration of the modern improvements in technique and protective appliances, rendering the procedure safe for both operator and patient, is it destined to play an important rôle in the difficult field of diagnosis in gastrointestinal disorders.

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MOULAGES OR WAX MODELS.

By J. J. HOUWINK, M. D., of St. Louis, Mo.

While visiting the dermatological clinics in Europe, I was very much impressed by the very beautiful collections of moulages, or wax models of skin diseases and syphilitic eruptions which I saw in the clinic of Professor Lassar, in Berlin, in the University Clinic for Skin and Genito-Urinary Diseases, the Charite Hospital, in Berlin, and in Das Kaiserin Friedreich's Haus in the same city. Before leaving home for my European trip, my attention was called by my co-worker, Dr. J. H. Duncan, to the importance of these collections. He had seen the collections of Professor Lassar, and those in the Hospital St. Louis in Paris, and in Das Allgemeine Krankenhaus in Vienna. Besides these large collections of moulages, there exists still one in Neisser's Clinic in Breslau, and a few small ones in other cities on the continent of Europe and in England.

A complete collection of this character does not exist in the United States. A few dermatologists in Eastern cities have some specimens, bought in Europe, but a regular museum in this line is not found on this side of the Atlantic.

In the large collections mentioned, one can find specimens of every skin disease known, the most common and the most rare, and the different varieties and stages in which the diseases occur.

The benefit that is derived by our colleagues of the old country from these collections is very great. Not only students, general practitioners and specialists, but also the public in general, appreciate them and profit by them.

Anxious as I was to get a museum of wax models in St. Louis, it would be practically impossible for an individual to buy a large collection, as the selling price is quite high. In Germany these specimens sell for 15 to 30 dollars each, which would mean for a collection of a thousand specimens, at least twenty thousand dollars. In France the prices are still higher.

I therefore tried to learn the technique of making wax models and, through the courtesy of Mr. Kasten, the artist and sculptor at Professor Lassar's Clinic, I was able to accomplish this. Of course, a simple knowledge of the technique does not make one an expert, by any means, and it will take a long time and hard work, study and much disappointment, to become proficient. Besides that, it is necessary that one be somewhat of an artist and possess an analytic eye for colors and, last but not least, be conversant with skin lesions.

It is true that Mr. Kasten, in Berlin, Mr. Baretta, who made the famous collection of moulages for the Hospital St. Louis, in Paris, or any other of the mouleurs in Europe, are dermatologists. They are all artists and sculptors and knew nothing of skin diseases when they started to make wax models; nevertheless, they are dermatologists now in a sense. Having made thousands of specimens, they had to look closely at the eruptions they wanted to copy and gradually, while doing this, they be-

came able to make a diagnosis as if they had studied dermatology in the ordinary way. It only required more time and gave them more disappointment than it would have done had they been dermatologists before commencing this work. And this is not strange, as they had to learn what they were trying to copy. Not understanding the clinical features and the pathology of the disease, the mouleur is apt to make mistakes that a dermatologist would not make.

Take, for instance, a case of lichen planus, with its papules, purplish-blue, having an irregular base, flat glistening tops, often-times umbilicated, and covered with minute scales. A mouleur who is not a dermatologist would certainly not notice all these peculiarities, and while his wax model might show the lichen planus eruption very artistically at a distance, it would not be lichen planus on close examination. Take a case of scabies, with its multiform eruption: vesicles, papules, pustules, crusts, etc., where the typical lesion is oftentimes masked by the secondary eruption, so that mistakes in diagnosis are quite common in this disease. We all know that the typical lesion in scabies is only the deep-seated vesicle at the end of a crooked, dotted line—the cuniculus—through which the *acarus scabiei* burrowed, and where she deposited her feces and eggs, while she herself is in the vesicle. An artist, not knowing these facts, would certainly overlook these most important lesions, and his moulage would not be one of scabies. So I could give a great many examples to show that a mouleur ought to be a dermatologist in the first place. The best mouleur of course would be a dermatologist who is an artist at the same time. Now, will it pay a specialist to do this work, to give his time and efforts to this art; will it benefit him and others enough for the time he devotes to it? I certainly would answer this question in the affirmative.

Painting a wax model means for him that he has to study the color of the lesions he has before him more closely than any clinician would do. He must pay more attention to the shades in color, the shape, arrangement, distribution, and other peculiarities of the primary and secondary lesions, than he would do while simply trying to make a clinical diagnosis. In this way he will exercise the analytic power of his eyes all the time; he learns to see better, which is of great benefit, especially for a dermatologist. He simply studies while doing this work.

But not only is the making of these wax models of value to the specialist. If he has a large collection, including the rare skin diseases and rare varieties of the more common ones that are not diagnosed by the general practitioner and therefore referred to him, he will have a great help in his collection. For, looking at his specimens occasionally, he remains familiar with them, even if he sees these rare cases only very seldom in his practice, and he will be apt to think of them whenever they may come to him. He will therefore make fewer mistakes in diagnosis than he would do otherwise. He will better keep in mind the different varieties and stages of one and the same disease when he sees them off and on together. He can, making these wax models himself, follow the course of the disease and notice the results of his treatment at any time, if he only makes a series of models of the case under observation.

If he wishes to report or demonstrate an important case, he will be able to do this at any time, not being dependent upon the patient, whose eruption might have changed or disappeared in the meantime, or who might not like to be demonstrated personally.

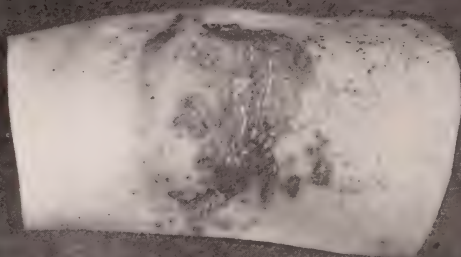
If he is connected with a medical school, he can show his students not only the common skin diseases that come to polyclinics daily, but also the rarer ones that may not be seen often in a life time. Any disease he may lecture upon can be demonstrated as the moulages are always at hand, which is not the case with patients. The teacher with a large collection of wax models can therefore give more to his students than the one who has only his small polyclinic to draw from. For no photograph, or colored print, can give the correct impression that a moulage does of dermic lesions.

These models are of great value also to the general practitioner, who naturally forgets a great deal of what he learned in college of skin diseases and as he has not sufficient opportunity in his general practice to come in contact with them. Visiting a collection of wax models will therefore be of the greatest help for him, as they will refresh his memory and keep him posted in diagnosing those cases which come under his care.

Finally, a collection of wax models is of value to the general public. The collection of moulages in Das Kaiserin Friedreich's Haus in Berlin, is open to the public and certainly has a good educational influence on every visitor. Young men and older ones, too, would be a great deal more careful if they visited, now and then, a museum of this character where they can see what it means to expose themselves to venereal diseases. There is no better education for the public, in guarding it from the dangers of syphilis, than showing, cool and naked, what syphilis means.

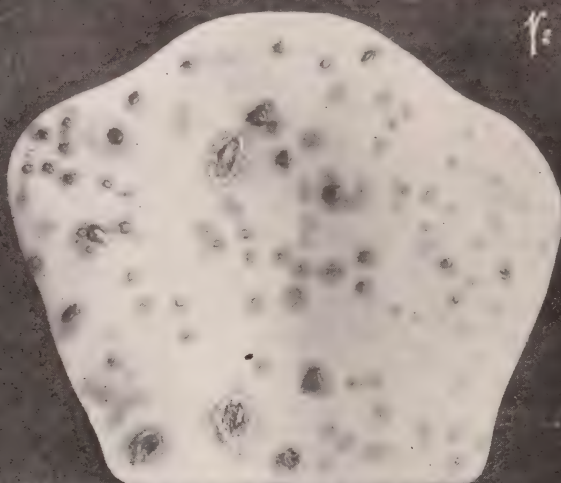
As it may interest the profession to know how these wax models are made, I will try to give a description of the technique. Having selected the part of the body of which a reproduction is to be made, I first cover this part with a thin layer of olive oil, which I apply with an ordinary, stiff, painter's brush. The purpose of this is to prevent the material of which I make a negative cast from sticking to the skin. The patient is now put in a convenient position so that he can keep the part I want to reproduce perfectly still while I make the negative cast. For instance, if I want to make a cast of his hand, I let him sit down and let his forearm and hand rest on a table. If I want to make a cast of his face, chest or abdomen, I let him lie on his back on a table, and so on. The position should always be so that it is possible for the patient to remain still for about ten minutes. Having the patient in the required position and the part oiled, I then proceed to make the material for the negative cast. For this purpose I use a very fine grade of plaster of Paris. This is mixed thoroughly with sufficient water to give it the consistency of thick buttermilk. This semi-liquid plaster of Paris is now brought on the oiled part of the patient's body. I do this with a spoon, or the hand, and have to do this as quickly as possible, as the plaster of Paris begins to harden very soon. The patient must be told to keep perfectly quiet under this procedure and not to get frightened when he feels the sensation of heat

V. 4.



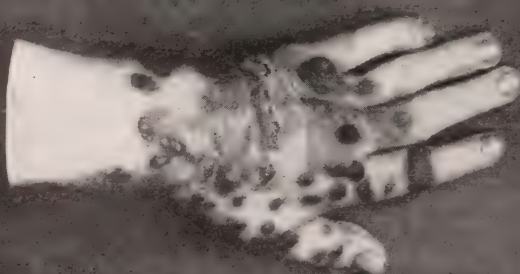
Lichen Ruber Planus

V. 2.



Pemphigus.

V. 5



Tuberculosis verrucosa cutis

to the part. This heat, caused by the chemical changes in the plaster molecules uniting with water, will never injure the patient and it is better to tell him this, otherwise he might not keep quiet. This is especially true when a negative cast of the face is to be made.

When the whole part is covered with a layer of plaster of Paris of about one inch thick, I allow this to harden, which takes from five to ten minutes. By scratching with the fingernail or by knocking on the plaster of Paris, I can judge if it has hardened enough to be taken off. If I think it hard enough, I take the negative cast from the part and immerse it in warm water. I leave it in the water until this is cooled off. The negative is then dried and ready for further use.

The technique described applies only to a case where I want to take only one surface. If I want to make a whole hand, foot, leg, etc., I must make two, three or more negative casts from different sides and later put these casts together, when I want to make the positive in "wax."

The material I use for making the positive is a mixture of beeswax, ceresin or Japanese wax, and paraffin, in different proportions. This material is melted in a waterbath or large milk boiler. When melted I add some paint to it, to give it the color, as much as possible, of the skin of the patient. I most often use a certain amount of zinc white, to make the "wax" less transparent, and some red or brown paint, according to the case. This paint—the ordinary oil paint in tubes as artist painters use it—is mixed in a spoon with some turpentine, and then thoroughly mixed with the melted "wax."

Having the mixture ready, I take my negative of plaster of Paris and put it in hot water. The pores will fill up with water and after taking the negative out of the water the surface is quickly dried with a towel and then oiled, as I oiled the skin. This will prevent the "wax" from sticking too tightly to the negative. The melted wax is now poured into the warm negative and allowed to harden, while the negative is constantly moved, so as to get an equally thick layer of wax everywhere. When the wax has hardened to a certain extent, I immerse negative and wax in a basin of warm water and let this cool off by adding cold water. The wax positive is now loosened from the plaster of Paris negative. This has to be done very gently and therefore I do it under water, so that the water coming gradually between the positive and the negative helps the loosening of the two parts. I then leave the wax positive, still in the cold water, for some time, so that it becomes thoroughly hardened, and then take it out. After drying it with a towel, I cut off the rough edges, shape it as I want it, and model it, where it may be necessary.

The wax positive is now ready for painting. However, I most often nail it on a black board before painting it, so that I need not handle it any more with my hands. The paint I use is the same I mentioned before, and is laid on the wax with camel's hair brushes. I use about ten different kinds of paint, by mixtures of which I can make every shade in color that I may need. Crusts, scales, blebs, etc., are put upon the wax model later, by dropping melted paraffin on the places where I want them, and they are then painted. To make some places glistening, I simply apply some varnish to them after they have been painted. To go deeper into this part of the technique would not be of value without a practical demonstration and I must be content with this short outline, which gives at least some idea of how these wax models are made.

MEDICAL AND SURGICAL PROGRESS.

INTRAVENOUS INJECTION OF STROPHANTHIN FOR CARDIAC INSUFFICIENCY.

A REVIEW OF RECENT LITERATURE.

By WM. ENGELBACH, M. D.

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3. INTRAVENOSE STROPHANTHININJEKTIONEN.—Starck (*Deutsch. med. Wochensch.*, No. 12, 1907).
4. NEUE MITTEILUNGEN ZUR INTRAVENOSEN STROPHANTHINTHERAPIE. Hedinger (*Muenchener med. Wochenschrift*, No. 41, 1907).

The essential requirements for a cardiac stimulant are prompt action, secure dosage and freedom from injurious effect on other organs. It is well known that both digitalis and strophanthus in the form of tincture or infusion are slow in their action, unreliable in strength, and irritate the digestive system. These considerations have tended to the improved pharmaceutical preparations of digitalis and strophanthus in the matter of standardisation. In 1875 the active principle of digitalis was isolated, in insoluble crystalline form, and was termed digitoxin. This is a glucoside, allied to digitalein and digitalin. In 1904 Cloetta isolated another substance known as digalen, which is practically a soluble digitoxin. One cubic centimetre of the glycerine solution is equal to .3 mg. of digitoxin. The effects of its intravenous injection are in evidence within a few minutes, the main disadvantage of its employment being that relatively large doses are required, i. e. 1.5—4.5 c. c. In the year 1885 Fraser separated the active glucoside of strophanthus. The Strophanthin-Boehringer is the most convenient preparation of this glucoside, being obtainable in sterile solution in glass bulbs, each containing an amount equivalent to 1 mg. The clinical records of its use by intravenous injection are most striking. Fraenkel, after an experience of fifty cases, reports that within a few minutes the pulse becomes strong, and the cyanotic symptoms are relieved very rapidly. The injections gave rise to no pain, but in a few cases rigors and pyrexia followed. The experiences of Mendel in five cases were, however, less encouraging. In one case the improvement only lasted two days, and in three others no effect at all was produced. This observer advocated the active principles of digitalis. A recent article by Starck, recording seven cases, concludes that strophanthin injections tend to strengthen the pulse, reduce its frequency and make its rhythm regular. The breathing is improved, the congestion soon diminishes, diuresis is established—in a word the whole circulation is conducted in a healthier manner. These reports determined Dr. Ludwig Schoenheim to give strophanthin a trial in the wards of St. Stephen's Hospital in Budapest. Eight cases were submitted to careful observation. Medicine was withheld for a few days before the injec-

tions were given, the twenty-four hours urine measured, pulse rate noted, and blood pressure taken with the Riva-Rocci instrument. The Strophanthin-Boehringer was injected with full aseptic precautions into the median vein. The patients all had cardiac disease with such symptoms as low blood pressure, irregular pulse, ascites, anasarca and hepatic enlargement. In three cases only one injection was given, because no manifest improvement followed, the fall of the pulse rate noted by other observers was not seen in this series; but an increased blood pressure was very striking, even to the extent of 60 mm. of mercury. This change could be detected by the finger in the course of a few minutes. Most of the cases also exhibited a marked increase of diuresis, the amount of urine passed increasing two and threefold. When the blood pressure failed to rise there was, however, no diuresis; but the cases which presented an increased blood pressure and diuresis showed also great improvement in general symptoms, and these continued to improve with ordinary medical treatment. It should be said that one case suffered from rigors and pyrexia after the injection, and another had nausea, vomiting, giddiness and headache. These symptoms only lasted a few hours. The following conclusions may be formulated in regard to strophanthin: (1) An intravenous injection should be given in cases of cardiac failure which do not yield to ordinary medical measures. (2) Strophanthin raises the blood pressure, produces diuresis, relieves congestion, but does not influence the pulse rate. These effects last a few days, and if necessary the injection may then be repeated. (3) In some cases rigors, giddiness, vomiting and headache may follow the injection, but these symptoms subside within a few hours. Dr. Max Hedinger deals with the objections which have been offered to its use, viz.: attacks of pyrexia or the onset of rigors. These can be avoided by using a carefully sterilised preparation. The author quotes an instructive case. It concerned a male, aged 57, suffering from granular kidney or arterio-sclerotic origin and cardiac failure. In 1900 he experienced shortness of breath and palpitation; in 1905 these symptoms grew worse, culminating in attacks of angina pectoris in the following year. When he came under the care of the author, there were dyspnoea, oedema, insomnia, with intolerance of food and medicine. The first cardiac sound was indistinct, both sounds at the base were accentuated. The pulmonary sounds were louder than the aortic, the beats were irregular, 104 per minute, and pulse tension was very high. The urine contained much albumin, with hyaline and granular casts. Four minutes after the injection of 1 mg. of strophanthin the pulse was reduced to 80 per minute, and the respiration to 24. A good night's rest followed, and free diuresis was established. The patient was able to lie down flat instead of being propped up. The benefit continued as long as the injections were continued. The conclusions arrived at may be summarised as follows:

(1) Strophanthin acts quickly and effectively in cases of circulatory failure, as evidenced by his last series of cases. (2) The undesirable sequelæ—pyrexia and rigors—are due to bacterial contamination of the solution. (3) The effect of the injections does not become less as they are persisted with, unless, of course, the condition of the patient deteriorates rapidly. (4) In doses of 1 mg. every twenty-four hours there is no fear of any toxic cumulative action. (5) The intravenous injection of strophanthin possesses advantages over the administration of digitalis by the mouth.

SARCOMA OF THE LONG BONES.

A REVIEW OF RECENT LITERATURE.

By MALVERN B. CLOPTON, M. D.

1. SARCOMA OF THE LONG BONES, PROGNOSIS, TREATMENT AND DIAGNOSIS.—Coley (*An. of Surgery*, March, 1907).
2. INOPERABLE SARCOMA.—Coley (*Med. Record*, July 27, 1907).
3. SARCOM DER LANGEN RÖHRENKNOCHEN.—Von Haberer (*Zeit. f. Heilkunde*. Bd. XVII Hft. 3).
4. UEBER DIE BEHANDLUNG DER SARCOMES DER LANGEN RÖHRENKNOCHEN.—Brochard (*Zentr. f. Chir.*, 1907, No. 45, p. 1327).
5. CONSERVATIVE OPERATIONS ON BONE TUMORS.—Bloodgood (*J. Am. Med. Assn.*, Feb. 1, 1907).
6. A CONSERVATIVE TREATMENT OF SARCOMA.—Babcock and Pfahler (*Surg. Gyn. & Obst.*, Feb., 1908).

In an exhaustive paper in which he reviews his experience with sarcoma of the long bones Coley states that he has come to the conclusion that resection should more frequently be practiced, particularly in those cases of myeloid tumors of the tibia and radius, following the practice suggested by Mikulicz and other German surgeons. He believes that the mixed toxins of erysipelas and prodigious used after operation will greatly widen the limits within which operation of resection may be safely employed. Trauma is considered as a pertinent etiologic factor (47% of his cases) and in his belief sarcoma is of microparasitic or infectious origin. In over two-thirds of his cases the tumor has started in the ends of the bone, the lower end of the femur and the upper end of the tibia and humerus. In a few cases especially of the femur and tibia the growth begins in the middle of the bone and here is nearly always of the periosteal type. On several occasions fever has accompanied sarcoma of the femur (10%) and in some cases of bone origin it has gone to 103°, this tendency to high temperature being noted in the more rapidly growing variety. Leucocytosis may go to 20,000, the lymphocytes and eosinophiles increasing. The x ray may be of value in showing periosteal or tumors of central origin but in the early stage it may be not only of little help, but in some cases entirely misleading. To differentiate sarcoma and bone syphilis is not nearly so difficult, the history with other evidence of the disease, and the location of the growth in the shaft of the bone and the decided help of the x ray showing a larger amount of new bone formation in syphilis than in sarcoma are deciding aids. The most conclusive and useful means of diagnosis in all conditions is the removal of a portion of the tumor for examination. In bone cysts the differential diagnosis is often impossible without a careful microscopic diagnosis, but inasmuch as only 31 cases of this disease are collected in the literature its rarity must be borne in mind, and nearly half of these were of the upper end of the femur. Cysts occur in sarcoma, so it is necessary to microscopically examine the wall of what might be considered a benign cyst.

Over half of the entire series of 69 cases were of the femur, and amputation at the hip was performed 13 times, high amputation through thigh 10 times. Of the 13 hip joint amputations only one was cured (5 years) and without exception the others died within a year. Of the 10 high amputations one died two years later, the others either died within

a year or are still under treatment, less than a year intervening since operation. Toxins were used in most cases.

Sarcoma of the humerus, is rare and exceedingly malignant, and of the 13 cases observed, 6 were amputated at the shoulder (one death from shock) and resection was performed in 3 cases. The amputated cases died before 10 months, 2 of the resected cases were lost sight of, the third (a giant celled osteo-sarcoma) after resection, which was not considered to have completely removed the growth, was given toxins and the patient remained well 9 years later.

With the exception of the femur, the tibia is more frequently affected than any of the long bones, the tumor is usually of central origin (egg-shell crackling elicited) and the giant celled type, situated at the upper end and does not early involve the joint. Amputation above the knee was done in 6, and the results were fairly good, excision was done twice in one with recurrence that yielded to the toxins. Of his 69 cases, 10 remained well over three years—of these 5 had the benefit of the toxins either with or without operation.

It is not out of place to mention at this time, Coley's experience with the toxins of erysipelas, and prodigiousus in inoperable sarcomata, which were located in many parts of the body, not exclusively in the long bones. The toxins are prepared differently than at the time of his first reports, so that now they are more or less standardized. The prodigiousus is most effective when the red color is the most pronounced and it is now grown separately, and later added to the culture of the streptococcus in given amounts. The injections are begun with a $\frac{1}{4}$ minim dose and increased by this amount when injection is made into the tumor, and by $\frac{1}{2}$ minim when the injection is remote from the growth, and the best results are obtained when severe reactions are obtained, (temperature from 102° to 105°). Periods of daily or tri-weekly treatments lasting several weeks are repeated after monthly intervals.

He has observed personally 42 cases, successfully treated, 21 patients were well from 5 to 14 years, 26 from 3 to 14 years and 10 cases well from 10 to 14 years, of these cases 17 were round celled sarcoma, 17 spindle celled, 2 mixed celled, 1 chondrosarcoma, and this same proportion holds in the 66 cases successfully treated by other physicians. As an adjunct to the surgical treatment of operable bone sarcoma the toxins are a great help.

The material for von Haberer's paper was 18 cases and of these 5 were amputated and 3 refused treatment. The remaining 10 cases were treated by excision of the growth, and of these 3 were later exarticulated for recurrence, and a fourth case was similarly treated for a supposed recurrence, but on examination of the amputated member it was seen that the trouble was an osteomyelitis, developed in the bone which had been implanted in the defect. This case remains well. The 6 cases treated by excision remain well over a period varying from 4 months to 4 years. Of the amputated cases—2 are well after several years, and 2 have recurrences, and one is lost. v. Haberer believes that in view of these facts that amputation becomes less frequently indicated and that conservative resection should be more used, particularly as it is made more definite by means of the x ray to bound the growth of the bones.

Brochard believes that it is a mistake to classify tumors of the long bones according to their cell constituents as they usually contain cells of diverse types, but to determine the malignancy of a growth the macroscopic appearance, the part of the bone from which they arise, and the more or less approach of the structure to the stroma, are the useful data.

The tumors which arise from the periosteum are the most malignant, and those tumors that remain inside the bone are the least malignant. The tumors whose extension is within the bone offer the best chance for conservative treatment. Dissemination in the marrow of the bones is rare, usually the growth is in direct connection with the primary tumor. Conservative operations are not so severe, and offer just as good results as mutilating amputations, and functional results are by far the best, particularly when the defects are repaired by the plastic implantation of bone after operations upon the diaphysis. With Brochard conservative operations are the rule, either resection or enucleation, each having their indication according to the nature of the growth. He reports 5 healed cases handled conservatively, of these 2 were periosteal sarcoma, one of the humerus, the other an infiltrating growth of the shoulder girdle. Another case was a central myelogenous sarcoma of the ulna for the most part encapsulated. The ulna was resected part of the radius chiseled away and a metacarpal bone, removed subperiosteally transplanted into the defect of the ulna.

Bloodgood notes that with rare exceptions permanently cured patients suffered from tumors of similar pathologic anatomy, and that such cures were accomplished in properly selected cases by conservative operations as well as by amputation. When cures were not accomplished the tumors were of similar structure, and in spite of high amputation the patient succumbed to internal metastasis.

In this article are considered several pathologic conditions, such as dentigerous cysts and adamantine epithelioma, which do not need be reviewed in this abstract. Giant celled sarcoma he notes as usually arising in the medullary cavity of the long pipe bones, although periosteal growths have been recorded. It is the most common form of epulis, which may be regarded as a periosteal growth of the alveolar border. In the fresh state it is hemorrhagic and mottled, and the tumor is friable. When it occurs as a medullary growth it expands the bone and grows slowly. The diagnosis had best be confined by frozen sections. Curetting has permanently cured, still recurrences have followed the curetting, but the cases were later permanently cured by curetting, resection or amputation. In over 100 cases of pure giant celled sarcoma none has given metastasis. It seems justifiable at the first operation to be conservative, either curette or chisel, removing a zone of bone beyond the tumor, or subperiosteally resect, if the bone covering is thin. Myxoma which is rare should receive the same treatment as giant celled sarcoma. Myxochondrosarcoma gives excellent results after resection. Periosteal osteosarcoma is the only tumor associated with the formation of new bone, and consequently is the only one which should be called osteosarcoma. It is most commonly met with on the lower jaw, does not give metastasis and can be cured by local resection. Exostosis bursitis may clinically resemble a rapidly growing sarcoma, but can be distinguished in x rays taken in various directions, which may show the exostosis, or by an exploratory incision. Bloodgood has never seen a permanently cured malignant sarcoma of the bone, and thinks it is suggestive that in this more malignant group studied in the literature, more cures have been accomplished by local resection than by amputation. The medullary growth eats its way through the cortical bone and does not produce expansion, pathological fracture may be the first symptom. The periosteal growth rapidly infiltrates the bone beneath, and the x ray gives the evidence of bone destruction.

Babcock and Pfahler divided sarcoma into two clinical classes, the

first or relatively benign, comprising the majority of central sarcomas of long bones, the myelomas, giant celled sarcomas and certain fibrosarcomas, which may be eradicated by simple resection, enucleation or at times curettage; the second group or very malignant sarcomas including the periosteal growths which are early fatal despite most radical resection or amputation. High amputation, usually unnecessary and unjustifiable for the more benign sarcomas, is usually unavailing against the more malignant. On the other hand malignant sarcomas are prone to spontaneous disappearance, or recede after x ray treatment, or the injection of toxins. The authors draw attention to the relation of trauma to sarcoma and accord to operative trauma the reason for the return of the sarcoma in the scar. The life and growth of the primary sarcoma rarely cause cachexia or a fatal issue, and the authors believe that the death and decomposition of the tumor cells do produce cachexia and occasionally death. Therefore they propose to treat sarcoma by a combination of judicious subcapsular enucleation with a prolonged Roentgenism, the topical application of methylene blue or pyoktanin and occasionally the administration of certain drugs and toxins, and offer results in malignant or recurrent cases superior to those obtained by the most desperate and extensive surgical eradication.

ROENTGEN DIAGNOSIS OF THORACIC LESIONS.

A REVIEW OF RECENT LITERATURE.

By E. H. SKINNER, M. D.

1. A VERTICAL ORTHODIAGRAPH.—R. Keinbock (*Archives of the Röntgen Ray*, March, 1908).
2. PHYSIOLOGIC AND CLINICAL OBSERVATIONS ON THE ALIMENTARY CANAL BY MEANS OF THE RÖNTGEN RAYS.—Geo. E. Pfahler (*J. A. M. A.*, Vol. xlix, pp. 2069).
3. ORTHO-RÖNTGENOGRAPHY.—Franz M. Groedel (*Archives of the Röntgen Ray*, November and December, 1907).
4. THE RÖNTGEN METHOD IN THE SURGERY OF THE CHEST.—Carl Beck (*Surg. Gyn. & Obs.*, Vol. V., No. 6).
5. FISTULOUS TRACTS, TUBERCULOUS SINUSES AND ABSCESS CAVITIES. A NEW METHOD OF DIAGNOSIS AND TREATMENT BY BISMUTH PASTE.—Emil Beck (*J. A. M. A.*, Vol. L., No. 11).
6. THE RELATIONS OF THE DIAPHRAGM AS REVEALED BY THE RÖNTGEN RAY.—Sidney Lange (*J. A. M. A.*, Vol. L., No. 9).

An increasing confidence in the ability of the roentgenologist is stimulating the profession to patronize the roentgen laboratory for aid in the diagnosis of thoracic lesions. This in turn has called forth the best efforts of the roentgen worker with the idea of simplifying the cumbersome apparatus of early workers in radioscopic and radiographic chest and abdominal work.

The principles involved include the proper protection of the patient and of the operator; a position of ease and comfort for the patient; and a proper adjustment of the tube to the patient, that the parallel rays may be used as much as possible in the examination. The apparatus exploited by German manufacturers appears too cumbersome and expensive for any but large or endowed hospitals. Keinbock (1) however describes

a comparatively simple orthodiagraph that should attract favorable attention. Briefly, it consists of a tube-holder and diaphragm, swung from one set of pulleys attached on the ceiling of the room, and the fluorescent screen, similarly attached, at such a distance from each other that the patient and a supporting frame may be interposed. Such a construction permits the apparatus to be raised out of the way when not in use. The radiosopic device reported by Pfahler (2) has the advantage of the tube being enclosed in a lead box, thus giving more perfect protection. Groedel (3) reports a more elaborate orthodiagraph which permits the examination of the patient in both the horizontal and vertical positions.

The extent of this diagnostic field of the ray is aptly described by Carl Beck (4). He emphasizes the use of the roentgen screen in the early stages of lung tuberculosis, solidifications and atelectasis. The recognition of cavities, abscess and gangrene is discussed. The diagnosis and recognition of foreign bodies is elaborated upon, both from the roentgen and surgical standpoint. Beck writes encouragingly of the value of the ray in the localization, and knowledge of the extent of the lesion, to be gained by the roentgen method of examination.

Emil Beck (5) describes a method for the roentgen diagnosis of fistulous tracts and abscess cavities in the lungs with a paste of bismuth and vaselin. His technique is described as follows: "The fistula should be first dried out, if possible, by packing into its depth a strip of plain gauze, one-half to one inch wide. The gauze is withdrawn just before the injection of the paste. The emulsion (bismuth subnitrate, oz. j to vaselin, oz. jj.—Mix while boiling) is sterilized before using, and the syringe is charged while the emulsion is hot and liquid. A glass syringe, with a nozzle similar to that of a Valentine irrigating tip, should then be loaded with the bismuth paste and tightly pressed against the fistulous opening; the emulsion is forced in very slowly, until the patient begins to complain of pressure. The syringe is then removed and a small gauze is quickly pressed against the opening to prevent the escape of the paste until it has hardened sufficiently. An ice-bag may be applied to hasten the hardening of the material." Emil Beck states the following conclusions: 1. A successful operation of fistulous tracts depends principally on the exact knowledge of the extent and direction of the sinuses before the operation is undertaken. 2. Radiographs taken after the fistulas have been injected with bismuth paste show the extent and direction of the fistulous tracts. 3. Skiagraphs of all fistulous tracts should be taken before an operation is decided upon. 4. Fistulous tracts, tubercular sinuses, or abscess cavities, including empyema, can be cured by the injection of bismuth paste. Several other conclusions relate his successful treatment of sinuses with these emulsions.

Lange (6) gives an interesting review of the relations of the diaphragm, as revealed by the roentgen ray, in pathologic conditions of the thoracic contents. The article is graphically enriched with diagrams illustrating phrenic levels in different thoracic lesions.

NEPHRITIS IN CHILDHOOD.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

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1. SIGNIFICANCE OF ALBUMEN AND CASTS IN THE URINE OF CHILDREN.—Sondern (*Archives of Pediatrics*, February, 1907).

2. OEDEMA IN THE NEWLY BORN AND IN THE INFANT.—D'Astros (*Rev. Mens. des Mal. de L'Enf.*, September, 1907).
3. NEPHRITIS IN INFANCY.—Carpenter (*British Jour. Chil. Dis.*, October, 1907).
4. NEPHRITIS AND IMPETIGO.—Guinon and Pater (*Rev. Men. des Mal. de L'Enf.*, November, 1906).
5. NEPHRITIS COMPLICATING ROETHELN.—Vincent (*Prov. Med.*, 1907, No. 41).
6. ACUTE HEMORRHAGIC NEPHRITIS AFTER PAROTITIS.—Jelski (*Archiv. f. Kinderheilk.* Vol. 47, page 164).
7. PROPHYLAXIS OF SCARLATINAL NEPHRITIS.—Thompson (*Edin. Med. Jour.*, February, 1907).
8. *IBID.*—Royer (*Therapeutic Gazette*, January 15, 1907).
9. ALIMENTARY REGIMEN IN SCARLET.—Courdouan (*These de Paris*, 1907).
10. ZUR FAMILIAREN HAUFFUNG D. SCHARLACHNEPHRITIS.—Spieler (*Jahrbuch. f. Kinderheilk.*, 1906).
11. UEBER PLOTZLICHE HEILUNG VON ACUTE NEPHRITIS NACH URAEMIE.—Eichorst (*Med. Klinik.*, 1906, No. 35).
12. BEHANDLING D. URAEMIE IN KINDESALTER.—Heubner (*Charite Annalen*, XXIX Jahrgang).

In a very suggestive article, Sondern¹ points out that in the acute nephritis of infancy and childhood, casts may be absolutely missing during the first few days, while in the chronic cases albumen may be absent at times. The quantity of albumen and the numbers of casts are not always of value in determining the degree of inflammation present. And again, it is noteworthy that the differential diagnosis between transitory and nephritic albuminuria is not easy. Many conditions not dependent upon renal lesion, may cause albuminuria with casts. Thus it is well known that in recurrent vomiting, and in cases of acidosis, albumen and casts, may occur without nephritis. Again, in intestinal auto-intoxication a similar condition may obtain. D'Astros² has shown that in the newly-born, an acute infection of septicæmic nature may attack the kidneys, whose powers of elimination are thus reduced. The diagnosis of the cause of the rapidly ensuing edema may for a time be decidedly difficult, inasmuch as casts may, in the early stages, be entirely wanting. Altogether, it is apparent that the laboratory examination of the urine in early infancy is not sufficient for a diagnosis. Clinical observation is also necessary. On the other hand there can be no doubt that a more frequent or routine examination of the urine in infancy, would lead to the detection of many renal abnormalities. Long ago Jacobi made the assertion that pyelitis was one of the most frequently overlooked diseases of early life.

In 62 infants, ranging in age from 3 weeks to 8 months, Carpenter³ found albuminuria only twice. The patients had been brought to the outpatient department for a variety of causes. He finds that dropsy is especially frequent in the newly born and then later on in the first year of life (age of gastro intestinal disturbance): But in this latter type, albuminuria is rare. Stoeltzner holds that edema occurring after the acute infections, always shows inflammatory conditions in the kidneys; though about this there is no agreement among various observers. Carpenter reports a typical case of renal inadequacy without kidney lesion macroscopically or microscopically. Carpenter also emphasizes the fact that cases of nephritis are apt to be overlooked clinically, inasmuch as extensive kidney disease may exist in infancy

without dropsy. One etiologic factor of importance in the nephritis of infancy is congenital lues; but there is no doubt that interstitial nephritis in infancy may be produced by toxins other than those of lues (e. g. intestinal toxins). The possibility of the seeds of this disorder of nephritis being sown in early life must be borne in mind. That certain individuals and therefore certain families show predisposition to kidney lesion has long been known. Spieler¹⁰ has shown an interesting statistical series of familial predisposition to scarlatinal nephritis. In 35 families, he had 83 children showing cases of scarlatinal nephritis, this evincing a familial lack of renal resistance. Guion and Pater⁴ report three cases of acute nephritis occurring in the course of impetiginous eczema, the infection doubtless occurring through the diseased skin. Vincent⁵ reports a case of acute nephritis in a girl of 15 complicating roetheln, while Jelski,⁶ has a case of acute hæmorrhagic nephritis after parotitis in a 7 months nursing. Cases of acute nephritis after inunctions of tar salve and peru balsam, have also been recorded recently.

Thompson⁷ discussing the prophylaxis of scarlatinal nephritis, reports the results of his treatment with urotropin. As will be remembered, this treatment was suggested some years ago by Widowitz. The drug is given in appropriate dose from the beginning of the disease to the fourth week. Thompson reported 47 cases so treated without nephritis, which can hardly be considered as proving anything for the treatment. Royer⁸ lauds the routine use of chloral hydrate, given in doses sufficient to produce light somnolence throughout the febrile period. Of 800 cases so treated, 5.5% had nephritis; of 756 cases otherwise treated 7.7% had nephritis. Again, one wonders whether this proves very much for the treatment.

Much attention has recently been paid to the question of dietetic prophylaxis of scarlatinal nephritis. The general consensus of opinion is that the absolute milk diet is not absolutely necessary. French observers have laid special stress on the importance of a salt free diet in scarlet. Hutinel and others have insisted that dropsy is to be attributed to retention of the chlorides; that it is therefore important to keep chlorides out of the food as much as possible in the conditions of potential renal irritability. Courdouan⁹ after careful study concludes that no special form of dietetic regimen will absolutely prevent the occurrence of scarlatinal nephritis, and this would appear to be the general view. At the same time, experience is showing that insistence upon an absolute milk diet for three or four weeks, is not absolutely necessary. Eichhorst¹¹ reports two very interesting cases of acute hæmorrhagic scarlatinal nephritis, which after uraemic attacks, suddenly recovered. Eichhorst believes that the uraemia formed a sort of renal crisis the toxic substances passing out of the kidneys into the system, thus producing the uraemia, whereupon the thus detoxified kidneys rapidly recovered. Discussing the treatment of uraemia in childhood, Heubner¹² lays special stress on the virtue of leeches, or venesection, or both. The results of the treatment are gradual, but in many cases surprisingly good. Very often large quantities of blood must be removed. Of 30 cases so treated, 7 died (23%); of 11 cases of uraemia in childhood otherwise treated, 5 died (44%). It will be remembered that, some years ago, Baginsky advocated this treatment of uraemia in childhood very strongly.

GRAVES' DISEASE.

A REVIEW OF RECENT LITERATURE.

By SIDNEY I. SCHWAB, M. D.

1. LE GOITRE EXOPHTHALMIQUE.—(*Rev. Neurolog.* No. 18, 1907).
2. ÜBER KROPFVERPFLANZUNG UND EXPERIMENTELLEN MORBUS BASEDOWII.—(*Münch. Med. Woch.*, No. 24, 1907).
3. DIE PERSISTENZ UND HYPERTROPHIE DER THYMUSDRÜSE BEI BASEDOWSCHER KRANKHEIT.—(*Münch. med. Woch.*, No. 16, 1907).
4. Publications of Cornell University, Vol. VI.

This abstract will concern itself with the mention of some of the more recent facts that have been added to our knowledge of Graves' disease. There has been a great interest in this disease in the last two or three years. Especially of late has this interest manifested itself by the constantly recurring reference to the subject in the best medical journals. One of the most important needs for the further investigation of the subject is that of animal experimentation. Whether it is possible to reproduce in animals the symptoms of Graves' disease, is an important fact to be established. If the disease can be said to occur in animals naturally, then the field of experimentation is much widened. According to Möbius, who even now must be regarded as one of the best authorities, this disease is found in animals. Sainton (1) has collected all the cases in the literature on this subject. Most of the cases fail to satisfy a critical conception of the symptoms of this disease. Several, however, are very striking, especially that of a horse which presented the characteristics of a Graves' which were relieved in great measure by a partial thyroidectomy.

The possibility of causing Graves' disease in animals experimentally has been often considered. The means thought of have usually had in view the transplantation of the gland into the tissues of animals. The secretion of the thyroid injected into the blood of animals has failed to cause any specially characteristic symptoms. The transference of thyroid glands into the tissues of one animal from that of another has likewise not been followed by symptoms typical of the disease. Pfeiffer (2) attempted to solve the problem by transplanting portions of the thyroid from a case of Graves' disease into the spleen of animals that show a certain tendency towards the development of symptoms similar to those found in Graves'. The only result that would point to the development of the disease was the rapidity of the pulse. The author does not draw any inferences from this experiment but suggests that it is by no means hopeless to develop the experimental studies along lines similar to these.

An interesting point is brought out by the report of Gierke (3) on the persistence of the thymus gland in cases of Graves' disease. It is possible, in some cases, to demonstrate that there exists an enlarged thymus, or a persistent thymus. In such cases, of course, the danger from the operation of thyroidectomy is increased very considerably and it is worth while, in all cases that come to operation, to inquire into this possibility.

The publications by Cornell University, volume VI, contain a series of interesting monographs on the subject of Graves' disease. In them are contained the reports of the preparation of the so-called Beebe-Rogers serum and the results of the treatment so far obtained. This is the most considerable contribution to the subject that has appeared re-

cently. Among these papers is an interesting study of the pathology of Graves' disease from the point of view of serum therapy. Ewing draws the following conclusions that tell rather directly against the assumption that the serum therapy is a logical method of treatment. 1. It is by no means shown that the thyroid is the sole and primary location of the disease. 2. The relation of the parathyroids to the thyroid is not understood. It is perhaps likely that the parathyroids exert a certain influence upon the thyroid gland itself so that efforts directed to modify this influence may be dangerous. 3. It is possible that the hypophysis exerts more of an influence on the causation of this disease than was formerly thought. In some cases changes in the hypophysis were found. 4. The changes in the gland itself, in certain severe cases, appear to place limits upon the notion of serum therapy. The chief objection to the idea of serum therapy lies in the fact that there are changes in the other organs which, by no manner of reason, can be influenced by serum derived from the gland alone.

Papers dealing with the results of various kinds of therapy are very numerous. The results of the treatment by the Rogers-Beebe serum is reported by Rogers. This serum, as is well known, is prepared by injecting the thyroglobulin and the nucleoproteid of a thyroid gland from a case of Graves' disease into dogs or sheep. There is formed in these animals an antibody and a cytotoxin which is removed from the animal by bleeding. This is injected into the blood of a patient suffering from the disease. Of ninety cases so treated twenty-three were apparently cured, fifty-two were improved, eleven were uninfluenced and four died. This result is scarcely better than is obtained by any of the methods so far used. The result certainly cannot compare to that obtained by the surgical treatment. The results obtained by the Möbius serum and the so-called thyroidectine made in this country, are too indefinite and are based upon too few cases to admit of any general conclusion. It is extremely doubtful if the serums alone can be said to exert any positive influence one way or another. The many good results reported by various authors with the x ray, electricity, etc., are upon close examination very unsatisfactory. The number of cases are much too small and the duration of observation much too short. The probability is that patients who are said to have recovered by these means would have recovered under any sort of treatment. It must not be forgotten that certain cases have a tendency to get well and that there is besides a marked variation and periodicity in the recurrence and disappearance of symptoms. Then again it is frequently observed that the thyroid gland causes a group of symptoms similar to Graves' as a kind of physiologic variation from the normal, owing to the temporary hyperactivity of the gland due to absolutely normal causes. Surgery has shown the greatest number of positive cures. The large statistics from the Kocher clinic, and the Mayo clinic in this country, together with those of numerous individual operators, show a percentage of recoveries from 55 to 75 per cent. This is far better than any form of serum or other treatment can show.

CORRESPONDENCE.

THE DUTY OF THE MEDICAL PROFESSION IN RESPECT TO EDDYISM—SO-CALLED "CHRISTIAN SCIENCE."

A LETTER FROM CHARLES A. TODD, A. M., M. D.

TO THE EDITOR:

It is with great satisfaction that one reads in the February number of the INTERSTATE MEDICAL JOURNAL the editorial commenting upon the more than extraordinary inanities and mischievous absurdities of the latest exploiter of human credulity, Mrs. Eddy. Poor Humanity, in its blind strivings to tear away the veil that hides the ultimate nature of things, ever the victim of presumptuous charlatanry and conceited ignorance!

The recent death of a well known citizen, a close friend of mine, while in the hands of a "Christian Science healer," puts a moral obligation on me to write this protest and earnestly to ask if it is not high time for the profession to take effective measures to dam the progress of this epidemic of Eddyism. The extensive spread of this epidemic is explicable by reason of the cult being based on homoeopathy; from the fact that its founder is a woman; and that its self-bestowed name of "Christian Science" is a most seductive catch-word: Did not Christ cure by miracle? For those not initiated it is more than difficult to credit a woman three times married, divorced once, who deserted her only child, and who within comparatively a few years has gained a large fortune through the sale of oracles, tithes and fees, with the spiritual power of Him who vowed to poverty, gave of his inner wealth freely without money and without price and on his painful way to Calvary had no where to lay his homeless head. Also, it is to be suspected that the methods of public and much of private education in the United States tends rather to favor superficiality of thought than to develop the power to weigh evidence judicially and thereby arrive at sound conclusions. By no means is to be omitted this additional reason: Mrs. Eddy insists that through the mere reading of her book (the Eddy bible) cancer, consumption, all disease may be promptly eradicated and the reader in turn graduated to go forth a competent "healer." To the ignorant and to those not well balanced in mind (who, even in high places, are more numerous than suspected), such an appeal is irresistible. When there are so many of social and mental position who will publicly profess Eddyism and positively deny the possibility even of the existence of pain, of sickness, of disease in any form and boldly attempt to put their insane notions into action at the cost of human life and in defiance at times of our sanitary laws, then surely the duty of the profession is made more than plain. A few years ago there broke out in the Eddyite school in St. Louis an epidemic of smallpox. The disease was allowed to run its course until a teacher and a number of pupils fell sick. Here, evidently, was an acute contagious disease and we have a well-known law requiring all such to be promptly reported for the protection of the city. Yet this epidemic became known to the authorities purely through chance. One of the pupils, not a boarder, sickening at home, an investigation as to the cause of this plague was at once made and traced to the school, which then

was taken in hand as the law provides; some of the cases were already in the last stage. How many cases of diphtheria, scarlet fever and other scourges of the nursery are likely to be hidden away in just such reckless and criminal fashion to the inestimable danger of their several neighborhoods. My friend, Mr. C., was a man of specially robust constitution, strictly temperate, the active head of a large business. One who could rightly anticipate years of prosperous life, yet he now fills a most untimely grave, due to death by "Christian Science." His wife was a fanatical devotee to that ism and well-known as a "healer." She, too, was of most vigorous frame and of equally vigorous will power. The question of Eddyism has long been a matter of dispute between them. Mr. C. in his occasional visits at my house would ridicule its gross pretensions and deplored the harm it had worked in his own household. He stopped his wife from "practicing" in an office, but out of his great affection did not venture to proceed further. We last met in January, when he complained of being sick of grippe and asked me if it were not a germ disease. I assured him that it was, and, fearing his wife's interference, warned him impressively by no means to neglect his condition. At the time there was a severe epidemic of that treacherous disease. Only sixteen days later his friends were shocked at reading the notice of his death. Grippe-pneumonia was on the death record. "Christian Science" had marked him for its own, with the natural result. Grippe-pneumonia does not recognize the exorcisms of Mrs. Eddy. Some years ago a married pair in Connecticut conceived the insane idea that, like Abraham, they were called upon to sacrifice their only son, which they did, no providential ram appearing. Is there any essential difference between the two instances? Such *assisted* death doubtless occurs daily. Ought the profession to allow the thousands of "Christian Science healers" scattered over the land, illegally to usurp its sacred office and unchecked to be the reckless purveyors of death?

Doctors have long taught that many of our sicknesses are but the outcome of self-indulgence, physical or mental, and are to be thrown off by will power and regimen. But Eddyism in its presumptuous ignorance has the reckless hardihood to deny facts about disease, that have been demonstrated with the absolute certainty of mathematical proof. An Eddyite occupying a public position of importance, when asked how he explained the glorious victory achieved in Cuba and Panama in eradicating yellow fever by extermination of the germ-bearing mosquito, quite easily met the difficulty by resolutely declaring that he "did not believe a word of it." Such must consistently be the very rational stand to be taken by the worshippers of Mrs. Eddy in regard to all those grand discoveries that have made possible modern surgery and so much of the most valuable of our therapeutics. Such a mental attitude belongs to a cult of the dark ages of superstition and blind credulity, rather than to one born in our own times, yet it is what we have to reckon with. For the benefit of one branch of medicine, I cannot refrain from quoting here this choice excerpt from the Eddy bible (*Science and Health*. Last edition, p. 528. Copyrighted. Price \$3.00). Mrs. Eddy commenting on the excision of Adam's rib during his sleep, out of which to create Eve: "Here falsity, error credits Truth, God with inducing a sleep or hypnotic state in Adam, in order to create woman; this is the first record of Magnetism." (Magnetism is *persona non grata*). "According to this narrative surgery was first performed mentally, and without instruments; and this may be a useful hint to the medical faculty." It might be here stated that Mrs. Eddy is severe on our common ancestor. She says (*ibid.* p. 338): "Divide the name Adam into two syllables and it reads, a dam, or obstruction. This suggests the thought of something

fluid, of mortal mind in solution. * * Here a *dam* is not a mere play upon words, for it means much. It illustrates the separation of man from God, etc." Adam also is defined (*ibid.* p. 579): Error; a falsity; the belief in original sin, sickness and death; a curse, etc.

Publicity, full and uncompromising is the means of coping with Eddyism. Demonstrate in open court both the crass absurdity of its claims as a mode of cure and its constant danger to the community through its obstinate denial of the existence of disease, contagious as well as other. If necessary let a law be passed empowering any one in case of a death under the hands of a "Christian Science healer," or any other such illegal practitioner, to demand that a coroner's inquest be held, even should a licensed practitioner of medicine have been called in, for it is a common opinion that such a course not infrequently is taken to secure the burial certificate and to avoid an inquest. That is, in *order to avoid publicity*—the very thing we argue. The court proceedings should be published in at least one daily paper and be open to all. Should a licensed doctor of medicine appear in the case he should be summoned before the court to testify as to his status in the case: In what condition he found the patient, and what was his own course; whether he had stood by a passive spectator or had interfered according to his sworn duty as a certified practitioner and applied the suitable remedies. Under the latter supposition he would stand exonerated, but the Eddyites in charge would be convicted publicly of palpable double dealing, an accusation not easy to bear by any self-respecting person. For Mrs. Eddy specially anathematizes such: "Take heed: We regret to be obliged to say that all are not Christian Scientists who call themselves so. Charlatanism, fraud and malice are getting into the ranks of the good and pure. This evil obtains in the false teaching and false practice of the science of treating disease through the mind. The silent address of a malpractitioner can only be portrayed in these words of the Apostle: 'Whisperers, the poison of asps, is under their tongue.'" This is a close parallel to Hahnemann's anathema against so-called homoeopaths who do not strictly hold to his infinitesimal dosage. An exploded doctrine, yet the *basis* of Mrs. Eddy's wonderful "discovery." But should the doctor have suffered himself to have been used as a mere buffer between the malpractice and the law, then should he not be forced by the Board of Health to show cause why his certificate should not be revoked as having been convicted of deliberately and knowingly conniving at malpractice? One such renegade example thoroughly exposed and punished by the revocation of his license would effectively put an end to such shameful prostitution of an honorable diploma. Should there be found in St. Louis any one who has so little sense of common decency as to affix to his title M. D. the letters C. S., meaning Christian Science practitioner; a man who publicly advertises himself as denouncing all belief in the existence of disease in any form and in the efficacy of medicine, daring at the same time to advertise himself as a doctor of medicine, can self-stultification go further? Ought he be allowed thus to attempt to bring the honorable title of M. D. into common disrepute? There may be some among the laity who would cry out that such action as is here advised would be an invasion of privacy and so "unconstitutional," and other dreadful things. Then equally to charter medical colleges, to prescribe a definite term of study; to license practitioners, should be unconstitutional. Such restrictions are permissible only on the ground that they are demanded by and for the public well-being—*Salus populi suprema lex*. New conditions require new laws. That a cult should spread extensively over our land which denies in toto the possibility even of the existence of dis-

ease and contagion, as well as the need of the simplest medical cure, constitutes a new condition at once extraordinary and dangerous in the extreme, so far as its teachings are put in actual practice.

Suppose in the case of the unhappy Mr. C. an inquest had been held and upon the body the usual lesions of grippe-pneumonia demonstrated: consolidated lungs, congested brain, and other grave conditions, all indicated during life by the consuming fever, racking pain, choking cough and finally delirium to close the sad scene. The cause of death being thus clearly established then follows a searching examination of those in charge of the sick man as to his treatment. The scheme of "Christian Science" treatment rigorously requires that the patient should be forced, debilitated and suffering intensely though he may be from the grippe poison, to be kept dressed and about; by no means to be allowed to act the sick man, or in the least to obey the warning demands of nature to economize and fortify his strength; he must "have faith" is dinned into his throbbing brain with crazing iteration. "There is no such thing as pain, or sickness—all 'mortal mind,' my friend." A mad dog with frothing jaws rushes at you; a tottering wall is about to fall upon you—stand firm, all "mortal mind, Adamic error." Would the public long tolerate such fanatical human sacrifice?

To conclude, I take the liberty to suggest as an initial step in protecting the public and the profession from the very positive evils of Eddyism, that the St. Louis Medical Society make the consideration of its suppression a special order of business. The foregoing is respectfully submitted as a possible plan of campaign. The profession should not defer action longer and suffer this insidious epidemic of Eddyism to gain more ground and to become correspondingly more and more reckless as to health and life and at the same time more difficult to eradicate.

CHARLES A. TODD, A. M., M. D.

OBITER DICTA FROM FOREIGN JOURNALS.

FOUNDER OF THE RED CROSS.

Joannes Henricus Dunant, the founder of the Convention of Genève and of the Red Cross, we learn from the *Münch. med. Wochenschrift*, will celebrate his 80th birthday on the 8th of May. The occasion will be made memorable, and the name of the founder of the Red Cross and promoter of the Genève Convention perpetuated, by a beautiful medallion made by Mayer and Wilhelm of Stuttgart. The obverse of the medallion will bear the inscription "Joannes Henricus Dunant, natus 8 V, 1828." On the reverse side the following will appear: "Joannes Henricus Dunant, Fundatur operis Crucis Rubrae, 1863; Promoter Conventionis Genevensis, 1864."

THE INSTITUTION FOR CANCER RESEARCH IN BERLIN.

Dr. O. C. Wijnhausen, in "Het Nederlandsch Tijdschrift voor geneeskunde," gives a description of the Berlin Institution for Cancer Research, which is in charge of Professor Leyden. It is the oldest institution of this character in Germany and enjoys many advantages over others of a similar kind. It always has a sufficient number of patients, contains every facility and abundant instrumentarium for laboratory research, while connection with surgical clinics is kept up constantly. The institution is located in the Charité Hospital, so that patients are always plentiful. It consists of three barracks, of which two are used for the nursing of patients and one for laboratory research. They are all newly built and up-to-date as to hygienic features and have room for twenty-two patients. All the patients suffer from inoperable cancers or have been operated upon for cancer. Most of the patients do not know that they are suffering from cancer and everything is done to keep this knowledge from them. The writer saw one patient who had been operated upon for cancer of the pharynx and larynx; larynx, pharynx and tongue had been resected, two openings could be seen just above the manubrium sterni leading into the trachea and esophagus; deep in the wound the spinal column was visible, and high up the palate—a masterpiece of surgical technique, but—is not death preferable to such a life?

The treatment carried out consists of a dietetic, local and specific therapy. First: The dietetic treatment consists in a feeding, specially prepared for every case in particular, in which milk and cream take a first place, the effort being to supply more calories than the patient needs for his existence. Meat is not omitted from the diet list in the Berlin Institution as is done in similar institutions in other cities. By this method most of the patients gain in weight and complications may be prevented. For instance, patients suffering from cancer of the bladder or uterus, will not have a perforation of the carcinoma into neighboring organs so soon when the affected organ is surrounded by fat.

Second: If possible local treatment is applied. Cancers of the skin are cauterized with zinc chloride, cancers of the esophagus are treated locally with trypsin or pancreatin. Third: Medical and specific treatment. Patients are treated in different ways. Some get large doses of atoxyl, others get a serum, obtained from sheep or an extract of rabbit's liver. This last treatment is based on the fact that primary cancers are practically never found in the liver. Von Leyden and Bergell noticed a specific action of this liver extract in cancer in mice. Radium has been tried but without results.

What has been gained so far by this treatment? According to Prof. Leyden, patients in the institution are kept alive much longer than would be possible under ordinary circumstances, less complications and metastases are seen. In case of young metastasis, these have often been seen to disappear under the serum treatment. An interesting case in the institution is the one of a patient in which a cancer metastasis appeared in the spinal column after operation for cancer of the breast. This patient has now been treated with serum for five years with the result that the disease came to a standstill and new metastases have not appeared. Influence on the primary cancer has so far not been observed under serum treatment. Cancer in the male progresses much quicker than in the female, a fact observed time and time again.

Assistants in the institution are Prof. Lazarus for therapy, Prof. Bergell for chemical research and Prof. Lewin for experimental research, while the daily care of the patients is in the hands of a voluntary assistant.

BIER'S HYPERAEMIA.

Dr. Wohlgemuth writes from Tsumeb in South West Africa to the *Deutsche Medicinische Wochenschrift* that the Ovambos have used Bier's methods for a long time. In dermatitis, abscesses, deep-seated pains, etc., they apply a sucking apparatus to the affected part. The apparatus consists of a cow's horn, the point of which has been filed off. The Ovambo medical man places the broad opening of the horn over the affected part, while he puts the point in his mouth; upon the end of his index finger a piece of clay is adhered. He now makes a deep inspiration, causing as much of a vacuum in the horn as possible. The piece of clay is applied over the opening at the point and the horn hangs to the part as a modern cupping glass would do. In case of phlegmons, they tie a string of elastic grass above the affected part of the limb in such a way that little edema follows. The hyperaemia is maintained for from 12 to 24 hours.

HISTORICAL NOTES.

"REMAINS" OF SAMUEL BARTLETT PARRIS, M. D.

Samuel Bartlett Parris (1806-1827) was a physician, a poet and a promising medical writer. A collection of his miscellaneous essays and poems was published at Plymouth, Mass., in 1829. This volume shows how great a loss to the republic of letters was the early death of Dr. Parris. In his poem, *Anticipations and Recollections*, he speaks of the

"fears, anxieties and cares
Which ev'ry one must know, who boldly dares
Attempt the noble task to blunt the fangs
Of fell disease, and soothe the suffer's pangs."

PARRIS'S TRIBUTE TO HIPPOCRATES.

"Such was 'the Coan sage.' By schools untaught,
On Nature's page he for her precepts sought;
With eye observant marked each wayward change
In maladies of frightful shapes, and strange,
And gave to ages of succeeding date
His labours to admire and imitate.
Nor less his *patriotic* virtues shine;
In vain might honour, wealth and power combine,
To tempt his footsteps to a foreign land—
He all their bright allurements could withstand,
For far surpassing wealth and power he viewed
The noble consciousness of rectitude."

PARRIS'S LINES TO JENNER.

"Oh! for some genius, Jenner, great as thine,
To quench the venom of that power malign.
Thine was the glorious work, and thine the skill,
To stop one mighty flood of human ill.
Ages had rolled on ages, while the scourge
From mourning friends had called the frequent dirge;
Empires had trembled, when they saw with dread
The dreadful weapon brandished o'er their head;
Thousands before its path made haste to fly,
Only to spread its sure mortality.
Its touch dissevered every sacred bond
That binds the spirit in attachments fond;
The objects of its wrath were shunned with fear,
E'en those, to whom their welfare was most dear,
Avoided their approach with horror wild,
As though by fiend-like crimes they were defiled.
If by no care for her own life restrained,
The mother with her sickening child remained,
She bought the privilege with life alone—
To save her child's she sacrificed her own;
And even that price in vain was often paid,
And child and mother in one grave were laid.

Oh! fearful and heart-rending was the cry
Of nations whelmed with this calamity,
When Heaven in pity looked upon their woes—
It gave the mighty word, and Jenner rose;
The demon of the pestilence beheld,
And by his heaven-directed power compelled,
Dropped from her hand the vengeance-whetted blade
And fled his presence, trembling and dismayed.
Now she has ceased the shrinking throng to force
To death's dark vale, along their downward course.
Closed are those gaping portals of the tomb,
Through which she drove the thousands to their doom.
None but her rash and willing slaves expire,
Self immolated to her vengeful ire.

Immortal Jenner! Were thy name enrolled
On every heart in characters of gold,
'Twere but the homage justly due thy deeds,
Whose worth all calculations far exceeds.
Hadst thou upraised the desolating sword,
And o'er the earth thy slaught'ring legions poured,
Until thy thirst for conquest sacrificed
As many as thy genius has devised
To rescue from the grave—thy name had shone
With those of Cæsar and Napoleon,
High on the list of those, whose deeds sublime
Of glorious murder and heroic crime
Have given them acknowledged right to claim
The death-earned glory of the victor's name.
But no such brightness now is round thee thrown;
Even thy name to those alone is known,
Whom studies of the healing art engage,
While plodding o'er the weary midnight page;
Yet, who would not exchange the blood-bought crown,
And all the conq'ror's ill-deserved renown,
To purchase thy proud consciousness of worth,
Richer than all the diadems on earth?"

BOOK REVIEWS.

PROGRESSIVE MEDICINE. Vol. I, March, 1908. A quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, 284 pages, with 11 engravings. Per annum in four cloth-bound volumes, \$9.00; in paper binding, \$6.00, carriage paid to any address. Lea & Febiger, Publishers, Philadelphia and New York.

The March issue of *Progressive Medicine* deals with the following five branches of medicine: Surgery of the Head, Neck and Thorax, by Charles H. Frazier; Infectious Diseases, Acute Rheumatism and Croupous Pneumonia, by R. B. Preble; Diseases of Children, by F. M. Crandall; Rhinology and Laryngology, by D. Braden Kyle, and finally Otology, by A. B. Duel.

It is well known that in these reviews both the scientific and practical side of each of the various specialties of medicine is thoroughly covered by writers of recognized authority.

THE SEXUAL INSTINCT. Its Use and Dangers as Affecting Heredity and Morals. By James Foster Scott, A. B. (Yale), M. D. Publishers: E. B. Treat & Co., New York. Price, \$2.00.

The aim of this new contribution to the ever-increasing literature on sexual problems, is clearly stated by the author in the preface to this very interesting and instructive volume. "This book," he says, "contains much plain talking for which I offer no defense. Its justification will be found in the body of the work, designed to furnish the non-professional man with a sufficiently thorough knowledge pertaining to the sexual sphere."

It is another attempt to present this difficult subject to the laity in an intelligible manner. There cannot be any doubt concerning the necessity of a better information of the laity, but no two men will agree as to how much information is necessary. And therein lies the difficulty. "Necessary" information can never be immoral, but if certain details, anomalies, etc., are described with "unnecessary" accuracy and illustrated with numerous case reports, the reader at once will suspect some condemnable attempt to make the book not only valuable but also "attractive;" such an attempt will stamp it as immoral. We wish to emphasize that the volume before us is high above any such suspicion.

In the reviewer's opinion some of the chapters present their respective subjects in a form which stands unequalled, but others seem not quite clear, or emphasize too forcibly the religious point of view, which, however, we readily admit cannot be entirely omitted in a thorough consideration of the sexual instinct in all its various aspects.

WURZBURGER ABHANDLUNGEN AUS DEM GESAMTGEBIET DER PRAKTISCHEN MEDIZIN.

DIE RACHITIS. Von Dr. B. Gutmann, Spezialarzt fuer Kinderkrankheiten in Wurzburg. Wurzburg. Curt Kabitzsch (A. Stuber's Verlag). 1908.

This is a short, but very interesting monograph on the ever-attractive subject of rickets. The special feature of note about the presentation is the careful and rather exhaustive summary of the more modern theories as to the pathogenesis of rickets.

LEHRBUCH DER SÄUGLINGSKRANKHEITEN. Von Prof. Dr. med. et phil. Heinrich

Finkelstein, Privatdozent und Oberarzt am Waisenhaus und am Kinderasyl der Stadt Berlin. Zweite Hälfte, Abteilung I. Berlin W. 35. Fischer's Medicin. Buchhandlung H. Kornfeld. 1908. Price 4 marks.

This is the first part of the second volume of Finkelstein's text-book of Diseases of Infancy. This work may well be said to represent a perfect epitome of the most advanced present day thought, with reference to the diseases of the first year of life. In this present volume, the diseases of the respiratory tract are considered in great detail. It is of interest to note that such a subject as status lymphaticus which is ordinarily but cursorily handled, is considered very fully. It would appear that cases belonging to this category are not as numerous as the enthusiastic followers of Paltauf would have had us believe. Finkelstein's theory that many of these cases belong in his category of alimen-

tary intoxication, is most interestingly if not altogether convincingly set forth. The diseases of the circulatory and gastro-intestinal systems are set forth with much clearness and with a remarkable wealth of detail. One has but to look at the immense number of literary references found in the book, to be convinced of the author's wide reading. And a study of its pages shows him to have used his immense clinical experiences to the best advantage in addition.

THE COMMONER DISEASES OF THE EYE: HOW TO DETECT AND HOW TO TREAT THEM.

By Casey A. Wood, M. D., and Thomas A. Woodruff, M. D. Third edition, enlarged and improved, with index. Chicago: W. T. Keener & Co.

The third edition of this very useful and practical little hand-book for the physician in general practice, contains several new chapters dealing with the physiology, histology and gross anatomy of the orbit and its contents.

Dr. Frank Brawley has contributed a chapter on the relation of affections of the accessory sinuses to diseases of the eye.

The little work has now reached the respectable size of 598 pages, and is replete with thoroughly practical information for the general practitioner who is called upon to handle the commoner diseases of the eye. The teaching is sound and well abreast of present day ophthalmic therapeutic ideas.

LIGHT AND X RAY TREATMENT OF SKIN DISEASES. By Malcolm Morris and S. Ernest Dore. Price \$1.50 net. Chicago: W. T. Keener & Co., 1907.

This little book is a concise summary of the methods of application and results of Finsen's light treatment, x ray, and other therapeutic agencies which have been introduced into dermatological practice within the last ten or twelve years. It is mainly based on the authors' experiences, but the work of others in the same field is not overlooked. The great value of the book is found in the large amount of personal experience of the authors, on which their advice as to treatment is based.

THE SKIN AFFECTIONS OF CHILDHOOD, WITH SPECIAL REFERENCE TO THOSE OF MORE COMMON OCCURRENCE AND THEIR DIAGNOSIS AND TREATMENT. By H. G. Adamson, M. D., Lond., M. R. C. P., London, 1907. Oxford Medical Publications, Oxford University Press; American Branch, New York City.

A great many diseases of the skin are most often seen in children, some are met with only in childhood, while many affections, when occurring in children, are modified in the distribution and grouping of their lesions, so that they present altogether different appearances. From the practical side—from a clinical point of view, and as regards diagnosis and treatment—it is therefore an advantage to consider the diseases of the skin in children apart from the same in adults. This reasoning induced the author to write this book, which is the first one based on the facts mentioned. It is decidedly a valuable addition to our dermatological literature. General practitioners and especially specialists in children's diseases, who have to treat skin diseases in children, cannot find a better book to guide them in this part of their work.

DR. JESSNER'S DERMATOLOGISCHE VORTRÄGE FÜR PRAKTIKER. Dritte Verbesserte Auflage, 1908. A Stuber's Verlag (Curt Kabitzsch) in Würzburg.

The lecture of Dr. Jessner in Königsberg on different dermatological subjects, may be had separately and in book form. They are written for the general practitioner and postgraduate students, and give in a very readable way a review of the large subject of skin diseases. This third edition has been revised thoroughly and can be recommended to the general practitioner who wants to make a more thorough study of dermatology.

A MANUAL OF VENEREAL DISEASES. By Officers of the Royal British Army Medical Corps: Sir Alfred Keogh, Lieut.-Colonel C. H. Melville, Lieut.-Colonel Leishman, and Major C. E. Pollock. London, 1907. Oxford Medical Publications, Oxford University Press; American Branch, New York City.

This work is not intended as an exhaustive treatise or to compete with any of the great systematic works on the subject of venereal disease, but merely to act as a convenient manual for the use of the Army Medical Officer, to assist him in his daily work in the prevention and treatment of venereal diseases. This is what the authors claim for their work. We would add that not only military surgeons but every physician who has not the time to read all that is printed on this subject, and desires a clear, short and practical review of the treatment and prevention of venereal diseases with an up-to-date view on the subject, will be benefited by reading this little book.

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EDITORIAL.

THE ANTIVIVISECTION AGITATION.

The constitutionality of antivivisection laws should be well considered by those lawyers who are so intent upon placing such enactments on the statutes. The very basis of American civilization is equality before the law, and any law which can be enforced against one class and not against another is also repugnant to our instincts of fair play. Indeed such laws are so dangerous to our personal liberties that there is no other matter upon which higher courts are so keenly interested. Without a known exception class legislation is either declared unconstitutional or becomes a dead-letter through the impossibility of carrying it out. Should any official desire to enforce the laws impartially against all, he finds it impossible to do so and he gives up the attempt to enforce them against anyone. These results will inevitably follow in the case of antivivisection laws which single out scientists for restriction in their rare uses of the knife—for what is called vivisection is not always cutting and slashing, as the fanatics assert—and yet place no restriction upon farmers in their far more painful cutting and more numerous operations upon domestic animals. If a scientist working to save human life must use an anesthetic when he makes a tiny incision, it will be class legislation of the most vicious kind, if farmers are not compelled to use anesthesia when they make the huge slashes to remove the testicles of a calf. Of course such a law of general application would be absurdly quixotic and women indeed cannot be expected to enter enthusiastically into any crusade for making castration painless. To introduce such a provision into any bill would cause its prompt rejection, but failure to introduce it will render the law unconstitutional class legislation. The whole agitation should be dropped and the sooner the better.

Legislators have been deceived into believing that there is a widespread public opinion demanding regulation of animal experimentation. As a matter of fact there is no such demand, even among thinking people. The few fanatics who make all the noise have deceived themselves into

the belief that there is an abuse which must be corrected. Such zoophilia is merely a symptom of a neurotic condition calling for medical treatment. The Society for the Prevention and Abuse in Animal Experimentation would be better employed if it devoted its energies to something really needing reform, and not to an alleged abuse which exists only in their own minds. Over half the babies are doomed to early death and the process of killing them is very painful. Why not devote to them the time and labor now spent in abusing the scientists, who are trying to save the poor little innocents so uselessly slaughtered by ignorant mothers? "Suffer little children to come unto me" is a divine command in more senses than the theological one, for it is a demand of civilization. Are a few guinea pigs of such importance that they must receive attention while the slaughter of the innocents continues in a manner which out-Herods Herod?

Nevertheless, there is a beginning of reason among the fanatics for their proposed laws exempt all operations for the production of serums. Yet while acknowledging successful experiments, they most illogically try to place restrictions upon investigations to develop new serums,—the very work which should be unrestricted to obtain the truth.

RECENT INNOVATIONS IN PHTHISIO-THERAPY.

Graduated work, instead of rest for the tuberculous, is another of those startling things which have been so rudely jolting the orthodox out of their ruts. The persistence with which these reversals of practice have been recently disturbing us, is proof that the old ideas of treatment have not been based on all the facts, but merely on some of them. It is not proof that medicine is "at the bottom a mere matter of fashion," and "more or less of a comedy," as stated in the Paris letter published in the *Boston Med. and Surg. Journal* (Feb. 2, 1908). All sciences from chemistry to pathology form theories to account for all the known facts, and when a new fact is found, theories change to include it. The frequency of change in theory is evidence of healthy growth of science, and the great changes of recent decades are due to the enormous number of men now devoting their lives to digging out new facts. Fifty years ago when medical theories changed but slowly, there were many practitioners but few investigators, whereas now the research workers are legion.

The theory of rest in phthisio-therapy was based on the fact that we wished to reduce expenditures so that all the food could be applied to tissue building. The bacilli are then promptly destroyed by the strengthened tissues. The great objection to it is that upon cure, the poor patient is not able to return to work and his normal conditions of life.

"Some young firebrands in London connected with Brompton and its county sanatorium Frimley" are now resting their patients only in acute periods, when there is hæmorrhage or fever, but compelling them to work indoors or outdoors all the rest of the time,—the work being graduated from mere walking to such severe labor as masonry! When cured the patient is able to make his living—indeed he has been doing it while being cured.

The theory of graduated exercises in tuberculosis is reported to be the release of bacterial vaccines by the increased circulation, and the same good results are found as from tuberculin properly administered. Moreover opsonic tests reveal whether enough or too much has been released, and thus regulate the work, though experience shows that the patient's appearance and even his feelings can be safely depended upon. Results are said to be excellent. The feeding is merely ordinary diet with no stuffing, and fresh air is not made the main feature. What a tremendous change from the time when consumptives were confined to close rooms and kept drunk with whiskey.

The benefit of cold air has never been explained, but it must be re-examined in connection with the method of graduated work. It is common knowledge that the congested lungs of persons with small chests and big hearts rarely become tubercular, but that the anæmic lungs of the typical tubercular, big chests and small hearts are highly susceptible, and Geyser's method of increasing passive congestion as explained in *American Medicine* for February, not only seems rational but is apparently successful. It does seem that cold air likewise increases the congestion and may be beneficial for that reason. All methods of increasing the blood supply may then really be means of releasing vaccines which immunize the tissues, in the same manner as breathing exercises and graduated work. What an optimistic outlook there is for the further development of the tuberculin treatment to do directly what all these methods are doing in such a roundabout way. There is already in sight the possibility of curing tuberculosis as surely as diphtheria, and in this direction all investigators seem to be instinctively working.

The effect of light in tuberculosis must also be re-examined. In cloudy places where the sun rarely shines, Trudeau and many others have attained excellent results showing that the old idea that light was an essential in treatment was a baseless theory and though it still lingers in the text-books, there is less heard of it in America and none at all in Europe where cloudiness does not seem to affect the results in the least. Attention has been called to the experiments in the Finsen Copenhagen Institute, which show that the light used in curing lupus is too weak to kill or even injure the bacilli. It was then assumed that the cure was

obtained by the lethal effect upon the more susceptible pathologic cells and a stimulation of the connective tissue cells which thereupon replaced the atypic new growth by scar tissue in the same way that superficial cancers react to radium as applied by Abbe in New York.

A new explanation of Finsen's cures is offered by a Frenchman,—who makes the suggestion that strong light merely irritates the tissues sufficiently to cause a congestion, and that any other irritant is just as curative if it causes congestion. If this is true the phenomenon is of the same order as all the other methods of curing tuberculosis. On the other hand, the light bath to the whole body causes superficial congestion and draws the blood from the interior producing there a grade of anæmia which partly accounts for the bad results of excessive exposure. An increasing number of physicians are reporting adverse results of too much sunshine particularly in blonds and are empirically shading their patients in summer and in light climates. Perhaps indeed cold climates are beneficial from the emptying of the superficial vessels, while hot climates like the Philippines are so dreadfully fatal to consumptives, from the large amount of blood drawn into relaxed capillaries of the flabby skin. Truly these new firebrands of London, who are curing their cases and returning them to work, are compelling a revision of theories. Perhaps Bier has builded better than he knew.

NON-RESTRAINT IN TREATING THE INSANE.

Considerable professional attention has always been directed towards the proper methods of managing the insane, but the publication of a book on the subject by a cured patient describing his own experiences while an inmate of several institutions has created unusual interest among laymen (*A Mind That Found Itself*, Clifford W. Beers). In mental diseases the patient is unable to describe his symptoms accurately even if he so desires, and most of our knowledge is based upon the objective symptoms together with such peeps into the mental interior as these afford. The insanities therefore have never been wholly understood and though an enormous amount of study has been given the subject in the last fifty years, the impossibility of placing one's self in the exact position of the patient to look out upon the world as he does will always prevent accurate conceptions of the mental processes. It is then of unique importance to obtain from a recovered patient a well written description of what he remembers of his illness and its treatment. The work gives every evidence of being a truthful narrative of what the writer thinks were the exact facts and it is a fascinating story of manic-depressive insanity. It is not necessarily the truth, for even a sane man can rarely describe things as they are. When the witness has been so

desperately ill as to be insane it is of course out of the question to accept his statements as the exact facts. To the trained alienist who can read between the lines and interpret the story, this unique book is simply invaluable but to the lay reader who knows nothing of insanity it is misleading in the extreme. It is regrettable that the objective story—that of the hospital doctors—was not written and published as part of the work, for then greater weight would be given to the author's very sane and valuable suggestions as to the abuses in the treatment of the insane.

Although hospitals for the insane have undergone a tremendous change since the time when these invalids were loaded with chains and confined in dark cells, there are still abuses to be corrected and always will be, for the ideal management of today will be considered even brutal a century hence. A perpetual crusade is necessary to effect reforms.

In one respect Beer's book is bound to do great harm. It gives the impression that asylums are much worse than they really are. It is idle to deny that abuses exist and are concealed from the physicians in charge, for the work of an attendant is so nerve-racking that judgment is sure to be weakened and more or less brutality indulged in, but the impression given is that such conditions are well nigh universal. Considering the immense number of insane now in confinement there is a surprisingly small percentage of known cases of abuse. The extended newspaper notice of them gives an incorrect idea of their prevalence.

Many forms of insanity merely disarrange or shunt off parts of the thinking apparatus. The thoughts are all more or less warped, of course, but the patient feels, sees and hears, and can enjoy or suffer—many of them quite keenly—and some are delightful companions whose sympathy for others can also be utilized for their own cure. That is, modern treatment recognizes and uses the patient's thinking and feeling capacities. If there is any act of brutality or injustice, the patient is sure to be vindictive and commit offenses in retaliation, for he is guided by his emotions, having lost more or less of his inhibition. Unfortunately the expense of high grade attendants to carry out modern methods is so inordinate that there would be an outcry from tax payers, who would not tolerate the outlay. It is really a field for philanthropy. Perhaps the expense would be within bounds if the courts could compel the family to support insane relatives—at least paying for board and lodging. The state must pay a share, no doubt, as the patients are deprived of liberty to protect society, but it is popularly believed that the family has no obligation in the matter at all. If they were compelled to share the burden it is quite likely that better methods could be carried out and a higher percentage of cures obtained.

The most amazing part of the story is its revelation of the manner in

which a highly neurotic boy of a neurotic family, and having an epileptic brother, was forced through Yale when he should have been leading an out-door life, freed of all causes of nerve exhaustion. This part is a dreadful reflection upon our mania for education and the profound popular ignorance of hygienic living. Whether or not there is need for a national society to carry on a crusade for the prevention and cure of insanity, in the same manner as the antituberculosis crusade, is debatable, but the very fact that this case may not have had so early or severe a break down if proper out-door life had been his lot, indicates that there is at least room for a campaign of education as to mental hygiene. If we cannot give treatment to the wrecks who are still at large we might at least prevent future cases.

THE DOCTOR'S OBSERVATIONS IN HEREDITY.

The wasted experience of general practitioners is well nigh a disaster to exact science, for it seems a rule to carry our rich possessions to the grave leaving absolutely nothing recorded for the benefit of humanity. To be sure, the busy doctor finds little time for writing out his observations, and few are gifted with the faculty of generalizing from their own, facts which appear unduly important as compared with facts seen by others. Nevertheless every man who has had thirty or forty years practice surely has had many parallel cases which he could group together, and there surely must be times every day when a few minutes can be snatched to write down some salient fact which has been noted during the day. In course of time the records would become of inestimable value, and would also serve as a check to the memory which becomes so unreliable as we grow older that we cannot depend upon our own generalizations.

Studies in heredity have now become of the highest importance for it has at last been recognized that an enormous number of things we once considered as evidence of an unavoidable heredity are nothing of the sort, but merely result from the fact that the son has been injured by the same environment as the father. Seafaring races are prone to death by shipwreck, and if after begetting children the sailor dies in this manner, and these in their turn do likewise, it does not prove that death by shipwreck is an hereditary complaint. Yet what we call hereditary diseases are often classed as such on no better basis. When the cause is discovered and removed the "hereditary taint" disappears. That is, we have so misused the term that we have actually referred to "hereditary sterility" to account for the families in which a few members in each generation are childless and the family name is preserved by side lines. It is just in these cases where the old experienced family

physician has such a wealth of material from which he could definitely declare what types had perished and what survived. Then it might be possible to determine the reason for the fatality and prevent it.

The alleged inferiority of the first born is published by Karl Pearson as one of the many results of his method of studying the statistics of tuberculosis. It is charged that the elder children are so much more prone to the disease, as to indicate decidedly weaker constitutions. It has been argued from these facts and conclusions that small families are therefore weakening the race, and that married folk should keep on producing children so as to have the stronger later born keep up the stock. A more pitiful illustration of the misuse of statistics could scarcely be imagined—even assuming that the facts are as stated. In view of the other evil results of excessive child-bearing, it would be just as logical to postpone marriage until the age at which the best offspring are produced—assuming again that marriage is for the sole purpose of increasing a population already so congested that many fail to secure the necessities of existence. It is here again that the elder physicians have a wealth of data from which to determine whether it is really true that the elder children are the best for survival, omitting all reference of course to any discussion as to whether the best for survival are the best for any other purpose on earth. It may turn out that the world has been more improved by those who died young and left few offspring, than by those who survived to spend twenty or thirty years in a senile dementia—burdens to their families if not also to themselves. Facts are needed and the medical profession can supply them if it only would. It has been asserted that child-bearing causes so much exhaustion that the later born are feebler than the elder children and more prone to tuberculosis, so that Pearson's conclusions are surprising and need checking up by more extensive data. The practical results are of sufficient importance to warrant early work in this direction for it is quite possible that the choice of a profession by young men might be more wisely made under the doctor's advice.

LITERARY NOTES.

J. Arthur Thompson, M. A., Professor of Natural History in the University of Aberdeen, is the author of a book on "Heredity," recently published by G. P. Putnam's Sons, New York. Of all subjects which have a perennial interest for physicians, we doubt if any equals in importance that of heredity. Though the land occupied by the many theories has been more debatable than any other, the time seems to have arrived when a solution of the mighty problems affecting this subject is at hand. And this is due to the son of Austrian peasants, Gregor

Johann Mendel, who was born in 1822. One speaks of this genius with considerable awe, for his unostentation during the years spent in his cloister, when he prosecuted his studies in regard to hybridisation experiments with peas and other plants in the garden of the monastery, is without parallel in the history of science. Two papers, one dealing with peas and a shorter one with hawkweeds, and some meteorological observations, are the sum substance of his labors, but the results affecting the real theory of heredity are so great, that students no longer regard the theories of Darwin, Huxley and Weismann with the same degree of enthusiasm. Truly, Mendelism is epoch-making, and that it has "arrived" as the French say, is not only evidenced in the exhaustive work of J. Arthur Thompson, but in a number of biographies and magazine articles which have recently been published to show the qualitative work of the obscure priest, whose fame was not known to the world until brought before it by De Vries, Correns and Tschermak, in 1900.

The Proceedings of the Royal Society of Medicine (Longmans, Green & Co., New York) for November and December, are publications which should not be overlooked by physicians who wish to keep abreast of the times. As is known to many, the Royal Society of Medicine was formed in June, 1907, by the amalgamation of the following London Medical Societies: The Royal Medical and Chirurgical Society, The Pathological Society, The Epidemiological Society, The Odontological Society of Great Britain, The Obstetrical Society, The Clinical Society, The Dermatological Society, The British Gynaecological Society, The Neurological Society, The British Laryngological, Rhinological and Otological Association, The Laryngological Society, The Dermatological Society of Great Britain and Ireland, The Otological Society of the United Kingdom, The British Electro-therapeutic Society and The Therapeutical Society. An alliance such as this is necessarily one that can have only the best results, and if the numbers at hand are criteria of future issues, the medical world has cause to congratulate itself on the addition to its present monthly publications, of one of the most satisfactory journals that the critical amongst us could desire.

A very readable book, indeed, is Ronald Campbell Macfie's "The Romance of Medicine" recently published by Cassell and Company, New York. Not forgetting the fact that serious readers in the province of medicine, generally look askance at medical publications that are written in the popular manner, we can say of this book that it can be read with profit even by the most serious student, for it has many qualities, both literary and scientific, which place it far above the usual popular scientific

publication. The best chapters are those on *The Microbe: Its Discovery and Origin*; *Bacteria*; and *Representative Microbes*; while the weakest is the last chapter, *Surgery and Medicine: Their Present and Future*. It would seem that the author having kept up a high tenor of literary and scientific excellence, allowed himself to lapse, at the close of his book, into a style of writing that has always prejudiced us against medical books of the popular sort. Now this one blemish, though grave by contrast with the general excellence of the work, should not make any reader unwilling to peruse its pages, for the lessons to be gathered are many and fruitful, and the revelation that medicine reached the apogee of its Romance in probably the most prosaic period in history, namely, the latter half of the 19th century, cannot be without point to both physician and laic interested in the progress of medical and sociological thought.

Doctor C. Sobre-Casas, surgeon to the Rawson Hospital at Buenos Ayres, gives evidence in his recent work, *The Prophylaxis, Etiology and Treatment of Cancer*, (*Le Cancer. Prophylaxie, étiologie, traitement*. Paris: G. Steinheil) of the right sort of scientific spirit and the proper modicum of modesty which should characterize a work intended for medical thinkers. Unlike "The Conquest of Cancer" by C. W. Saleeby and "The Reduction of Cancer" by the Hon. Rolla Russell, the book under consideration is not blatant with theories especially prepared for a credulous public imbued with the idea, that the latest specific agent will be the means of effecting a cure and thereby demonstrate the uselessness of the knife. As Doctor Sobre-Casas says, "it is not my intention to elucidate the obscure problems contained in this chapter in pathology, nor shall I demonstrate the marvelous curative qualities of any specific agent, but merely condense what has already been written on the prophylaxis, etiology and treatment of malignant tumors." That the author is well equipped for his work is made clear to us by the fact that the Argentine Government appointed him in an official capacity to study the question of cancer, in the hospitals, clinics and laboratories in the different European countries, and to assimilate, if possible, the results of all researches made. The chapter relative to the organization of an anticancerous war, which at present obtains in various localities, indicates the industry and thoroughness of the writer in collecting data, and leaves nothing to be desired as regards the minutiae of a most interesting subject.

In connection with the masterly article by Prof. William Ebstein on the "Physiognomy of the Sick," recently published in the *Rundschau* (Frankfort-on-the-Main, Germany) and a translated excerpt of which

was printed in the "Obiter Dicta" of the INTERSTATE MEDICAL JOURNAL for February, it would be well for those who are interested in the subject, to read Dr. P. Hartenberg's "Physiognomy and Character" (*Physiognomie et caractère*, Paris: Félix Alcan, 1908). The author attempts to explain, scientifically, those physiognomic facts which have often been studied by savants in the past. As with most students of this engrossing subject, Dr. Hartenberg fails to arrive at definite conclusions, for the reason that physiognomic expression is the result of many and diverse influences, and to solve the intricate problems involved will require, for some time to come, a greater number of observations and more thorough analysis. Despite these drawbacks, the author accomplishes enough to warrant praise. And that he works on original lines is shown by the fact that, unlike his predecessors, he makes both physiological and psychological laws the foundation of his reasonings. Beginning by explaining the functional psycho-somatic relations and the centripetal action,—that is to say the influence of the organism on the brain,—and then the centrifugal action of the brain on the organism, he proceeds step by step, first analyzing individuals by studying them from the point of view of their anatomic constitutions, temperament, statics and dynamics, and finally noting the variations due to race, sex, age, profession, etc.

The new French journal, *Le Journal de Chirurgie*, (Paris: Masson et cie) is not only an excellent illustration of letter-press but has a contents of so high an order, that the editors B. Cunéo, A. Gosset, P. Lecène and others, are in no danger of receiving any but the kindest criticism. Monthly publications of the character of this new journal should find a warm welcome with all surgeons interested in the progress of their chosen specialty.

Dr. R. L. Thompson, Professor of Pathology at St. Louis University School of Medicine, has written a book of European travels that makes delightful reading on account of its originality. The book in question is "Glimpses of Medical Europe" (Philadelphia: J. B. Lippincott Company) and though it is meant to be a guide for students to whom European countries are as yet an unknown quantity, it is equally valuable to the many who have visited the places described by the author, for his judgment, wit and philosophy transform an otherwise dry theme into a fascinating picture, that surely must hold the reader who wishes to recall half-forgotten foreign scenes. Any new interpretation of a hackneyed subject should give us pause, but when the interpretation is as literary, witty and philosophical as is Dr. Thompson's, the pause should at once take on all the characteristics of enthusiasm and praise.

ORIGINAL ARTICLES.

SOME PRACTICAL ASPECTS OF THE PHYSIOLOGY OF THE CIRCULATION.*

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*Address delivered before the St. Louis Medical Society, February 29, 1908.

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INTRODUCTION.

1. The subject matter of this paper is divided into two parts as follows:

Part I. A consideration of some phenomena of the circulation with especial reference to mechanical conditions.

Part II. A consideration of some phenomena observed after alterations of the circulation by vascular anastomoses.

PART I.

2. In taking up Part I it may be well to state that the problems considered are of a simple nature. Furthermore we do not lay much claim

to originality in dealing with a subject that has been so largely dealt with by a multitude of investigators. For brevity, extensive reference to investigators, as well as many details, will be omitted.

3. In birds and mammals the circulation may be considered as one of the major vital phenomena, as cellular activity is so entirely dependent upon it. This is well illustrated in the case of fainting (syncope), the higher nerve cells being rendered incapable of properly functioning by anæmia, hence unconsciousness.

4. The practical considerations we have in mind deal ultimately with (a) the control of failing circulation in abnormal conditions, e. g. surgical shock, and (b) its restoration even after complete stoppage.

5. Morphologically, the circulatory apparatus consists of a central pump, the heart, connected with a system of elastic tubes, the blood vessels, divided into two sets as follows: (a) the arteries, which conduct the blood from; and (b) the veins which return it to the heart. These two systems of tubes communicate through the capillaries. The work of the heart is largely expended in overcoming the resistance offered to the flow of the blood through the arterioles and capillaries, so that the return of the blood through the veins is largely dependent upon other factors, e. g. aspiration of the thorax and general muscular contraction.

6. The pressure in the arterial system, under normal conditions, is largely dependent upon two factors: (1) the work of the heart; and (2) the peripheral resistance.¹ A third factor of interest in this connection is the mass of blood. This will be referred to later under Demonstration D.

7. (1) The work of the heart, i. e. the rate and force, is normally under nervous control.² The nerve impulses originate in the upper part of the spinal cord, the medulla oblongata. In the normal animal, if the arterial blood pressure be mechanically increased, as may be done by compressing the aorta, the working of the heart is automatically decreased, while if the pressure be lowered, as by releasing the aorta, the working of the heart is increased, the mean arterial pressure tending to remain constant. This control is normally exercised by the extrinsic cardiac nervous mechanism by virtue of impulses originating in the central nervous system. It is an interesting fact, recently discovered by Dr. Pike, of the University of Chicago, and myself, that after the extrinsic cardiac nerves are cut, viz. the vagi and accelerantes, and even in the heart removed completely from the body, there is strong evidence that such regulation of the rate and force of the beat to changes in arterial pressure is still preserved.³ Hence it appears that within the heart a mechanism exists, which, in the absence of any connection with the central nervous system, is capable of governing the working of that organ.

8. (2) We will now consider for a moment the mechanism of control of the peripheral resistance. It is well known that alteration in the peripheral resistance occurs under normal conditions chiefly through tonic changes in diameter of the arterioles. This is effected by nervous impulses that originate in the medulla oblongata and pass along nerve fibres to the muscular cells situated in the walls of the arterioles.⁴

After this very brief review, we may now take up the practical side of the question.

9. To the question, how may the possession of physiological knowledge be turned to practical use, a partial answer is to be found in the first demonstration.

DEMONSTRATION A.

Efficiency of Perfusion of the Coronary Arteries in Starting the Isolated Mammalian Heart.

(By Messrs. Quade and Tuholske of our third year class.)

10. The heart has been removed from the body and suspended from a cannula tied in the root of the aorta (see Fig. 1). It has ceased to beat.

Perfusion of the Coronary Artery in The Isolated Heart.

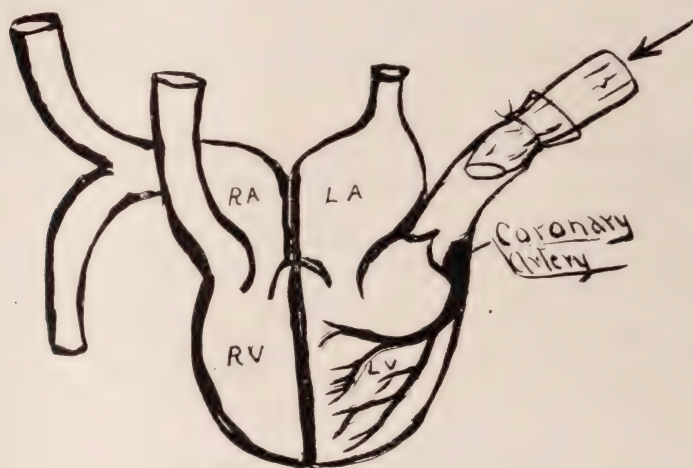


Fig. 1

Fig. 1. Showing cannula inserted into aorta for perfusing the coronary arteries in an isolated mammalian heart.

The animal's blood has been collected, defibrinated and mixed with three volumes of 0.9 per cent. NaCl solution. The mixture of blood and salt solution at a temperature of 35 degrees C. is injected through the cannula into the root of the aorta under a pressure of 160 mm. Hg. Thus perfusion of the coronary vessels is effected and the heart soon begins to beat strongly (see Fig. 2).

11. We are indebted to Langendorff, Martin, Porter and others,⁵ for the knowledge that perfusion of the coronary arteries will cause a quiescent heart to contract. The essential condition primarily involved appears to be a stimulating action associated with the pressure of the fluid in the capillaries of the heart. This is evidenced by the fact that inert fluids such as hydrogen gas,⁶ metallic mercury⁷ or paraffine

oil,⁸ are efficient in starting the beat in a quiescent heart providing of course that it has not been in that condition too long a time. But since such an inert fluid is unable to maintain nutrition, the heart soon becomes quiescent again.

12. Isotonic salt solutions have been extensively used for perfusing the heart. Chief among these may be mentioned sodium, calcium and potassium salts in the amounts they occur in the blood, as determined from the analysis of blood ash.⁹ These may be taken as representatives of the class of truly inorganic solutions.

13. The chief difference in the result with such salt solutions compared with the results obtained by perfusion with inert fluids, (gas, oil, mercury), is a quantitative one. The heart may beat more strongly and

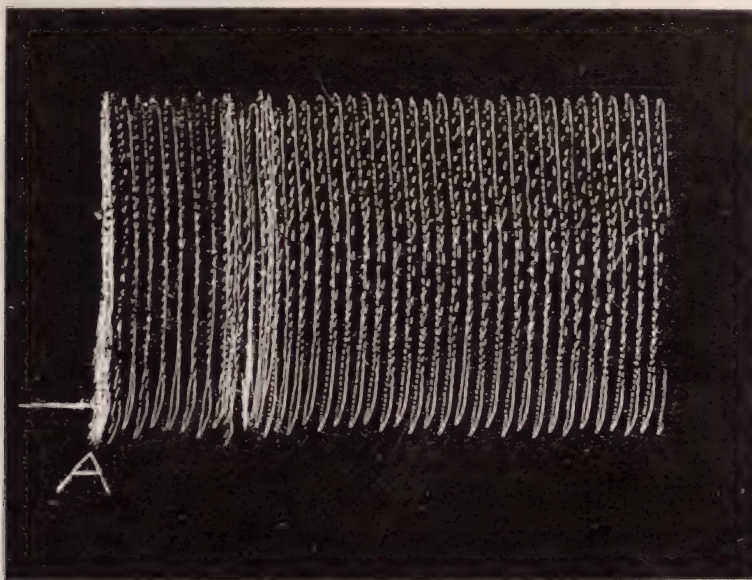


Fig. 2. Cardiogram showing contraction of isolated mammalian heart under perfusion. Injection begun at A, the drum being started after the heart had begun to contract.

for a longer time with a salt solution, but this may be largely explained: (1) by reason of its greater carrying capacity for the waste metabolic products of the heart tissues; (2) by its carrying a certain amount of oxygen in solution to the heart, and (3) the solution may have a stimulating action on the cells of the heart by reason of some specific quality of the salts as in the case of sodium or calcium,¹⁰ or by reason of lack of molecular concentration. Or it may exhibit a *pseudo* molecular concentration. By the latter term is meant that to physical measurements, e. g. determination of its molecular concentration by the freezing point method, the solution may be identical osmotically with the animal's own blood, but owing to the great difference in composition of the tissue liquids and the salt solution, other physical inequalities may exist.

It is interesting to note the difference in behavior of a quiescent heart placed in defibrinated blood and one placed in any of the inorganic salt solutions.

DEMONSTRATION B.

Showing Stimulating Action of So-called Isotonic Sodium Chloride Solution on the Heart.

(By Messrs. Ryan, Wier and Edler of our second year class.)

14. Similar strips of muscle from the ventricle of a turtle's heart have been prepared and attached to levers arranged to mark on a smoked

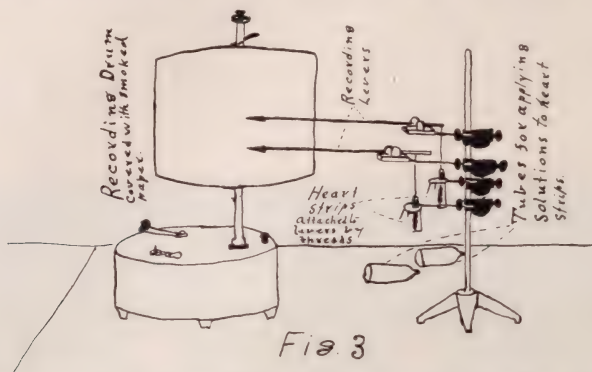


Fig. 3. Arrangement for recording the behavior of strips of turtle heart muscle.

paper (as shown in Fig. 3). Both strips are quiescent. On submerging one of the strips in 0.75 NaCl solution and the other in the animal's own blood which has been collected and defibrinated for that purpose, it is observed that the first mentioned strip soon begins to contract while the other strip remains quiescent¹¹ (see Fig. 4). On mechanical stimulation, the strip in blood contracts. (Fig. 5.) Also, if the blood be re-

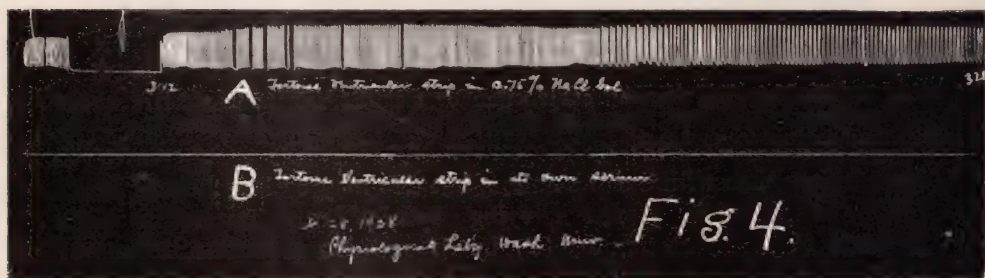


Fig. 4. A. Record of behavior of strip of heart muscle of turtle in 0.75 NaCl solution. B. Same in animal's own blood.

moved and replaced with salt solution, the strip begins to contract. This is very strong evidence that the latter class of solutions are not inert, but stimulating. They cannot be considered as nutritional, excepting for the small volume of oxygen they carry, which, even under a pressure of a full atmosphere of oxygen, is much less than the oxygen in highly venous blood. Therefore their action is to quickly exhaust the heart.¹² But the action does not stop there; the cells are caused to lose their vitality rapidly.¹³

The results of Christiani¹⁴ on the preservation of thin slices of tissues for grafting strongly corroborate this view. But this will be discussed later.

15. Another class of artificial perfusion fluids are prepared by the addition to inorganic salt solutions of substances calculated to render their physical characters more nearly the same as blood, e. g. the addition of gum arabic.¹⁵

16. Still a third class is prepared with the view of supplying food material to the tissues, e. g. Locke's solution,¹⁶ which differs essentially from the inorganic salt solutions, in that it contains a small amount of dextrose, which theoretically, will be oxidized. This has recently been independently demonstrated by Dr. McGuigan in our laboratory to be true for skeletal muscle,¹⁷ and by Dr. Locke, an English physiologist, for cardiac muscle.¹⁸

Another similar solution is prepared by the addition of serum proteid to the inorganic salt solutions,¹⁹ or from milk whey²⁰ so that the com-

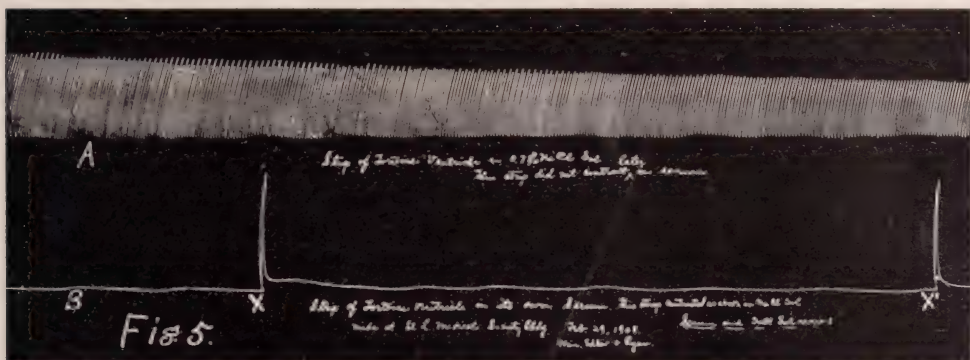


Fig. 5. Same as Fig. 4, only strip in blood was mechanically stimulated at X and X'.

position is more nearly like blood serum. It is generally accepted that any of the above solutions should be rendered slightly alkaline for the best results.²¹

Another class of solutions partaking of the characters of all those just described consists of solutions made by diluting the animal's own blood with one of the salt solutions.²²

17. We may arrange these solutions into two general groups as follows:

A. Non-nutritional, or those composed wholly of inorganic salts and water, and,

B. Nutritional, or those containing in addition to the substance found in the first group, organic substances found in the blood.

As judged by the results, we would put solutions containing blood in a class by themselves, while next would come the solutions most nearly approaching them in composition, e. g. whey solutions. Only such solutions are capable of initiating and maintaining for any considerable length of time *efficient* working of the mammalian heart.²³ By efficiency

of solutions in restoring the heart, is meant the production of rhythmical contractions of the whole heart of sufficient force and rate to maintain a circulation equal to that normally performed, and not merely as some investigators have used the term, notably Kuliabko²⁴ as the causation of *visible* contraction of isolated portions of the cardiac musculature.

18. Our results, then, although they have been obtained only after much shorter intervals after death of the animals, intervals of minutes²⁵ as against days, may, and we believe do have a practical value, while in cases such as above mentioned, the results are only directly of scientific interest.

What has been said may also be applied to the restoration of the heart *in situ*.

DEMONSTRATION C.

Efficiency of Perfusion of the Coronary Arteries of Starting the Heart *in situ* (see Protocol I).

(By Messrs. Seabold and Taylor of our third year class.)

19. The blood pressure tracing taken from the common carotid artery of the dog shows that the pressure has fallen to zero. (Fig. 6 A 5.) Also that the heart has ceased to beat as indicated by the cardio-

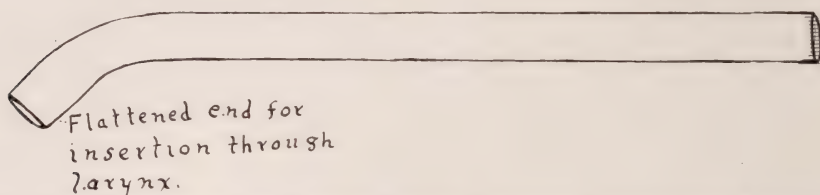


Fig. 7. Tube for passing into trachea through larynx in giving forced artificial respiration to dogs and cats with bellows or compressed air.

graph. (Fig. 6 B 5.) It must be remembered that as a rule the heart continues to beat for some time after its force has ceased to be communicated to the manometer. (Compare Figs. 6 A and B (4) to (5.) This condition has in some cases been observed to extend over a period of hours, but usually it is of only a few minutes duration. The thorax being open in this case, we are enabled to inspect the heart directly and we are unable to detect any contraction whatsoever of any part of the organ. Since it is well known that resuscitation is much easier of accomplishment if begun while the heart is yet contracting, even though feebly, we have a more difficult problem in such a case as this.

20. Our method consists of the following procedures:

(1) *Artificial respiration.* This is mainly for the purpose of oxygenating the blood in the pulmonary capillaries. In this case we are giving it directly with a bellows connected with a tube inserted into the trachea. In the intact animal, it may be given similarly by means of a tube passed into the trachea through the larynx, (Fig. 7) or by any of the well known methods of thoracic manipulation such as Sylvester's or Schafer's.²⁶

21. (2) *Massage of the heart.* This is chiefly for the purpose of establishing a pulmonary circulation before the heart has sufficiently recovered. This is very important as it not only tends to relieve the tension in the right heart and great veins due to congestion, which may seriously interfere with the recovery of the heart, but also supplies oxygenated blood in the root of the aorta for admixture with the fluid used for perfusing the coronary vessels.

In this case the heart is being directly massaged, but in the intact animal, in case of cats and dogs, this may be adequately performed by manipulation of the chest wall. In large animals with rigid thoracic walls it is sometimes advantageous to make an opening into the abdominal cavity and, by inserting the hand, manipulate the heart through the diaphragm.

22. (3) *Perfusion of the coronary arteries.* This is accomplished by introducing one of the fluids previously discussed, as 0.9 NaCl, into the root of the aorta under sufficient pressure to force it together with

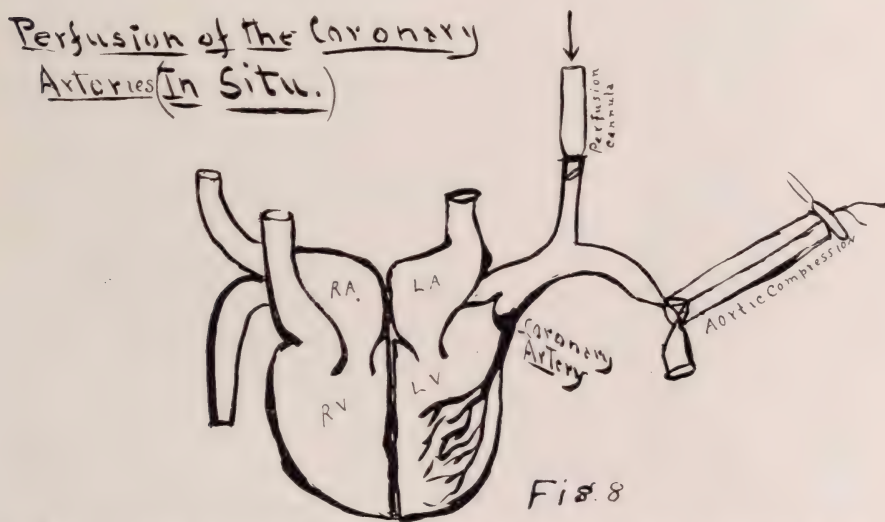


Fig. 8. Showing method of perfusing the coronary arteries of the heart *in situ*.

the blood massaged into the aorta through the coronary arteries. (Fig. 8). In this instance we have occluded the aorta just distal to the left subclavian artery by a temporary ligature. (Fig. 9.)

23. In resuscitating animals with the view of getting complete recovery, we use an instrument (Fig. 10) consisting of two tubes, one of which runs inside of the other. The smaller tube is connected externally with a syringe while internally it opens beneath a sleeve of thin rubber fitted around the larger tube near the end and tied tightly above and below around its edges. Liquid forced out of the syringe is delivered by the small tube between the rubber sleeve and the large tube with the result that the sleeve is expanded in the form of a bulb. Before inflating the rubber sleeve, the instrument is pushed down one of the carotid arteries, preferably the left, and the lower end carrying the sleeve directed

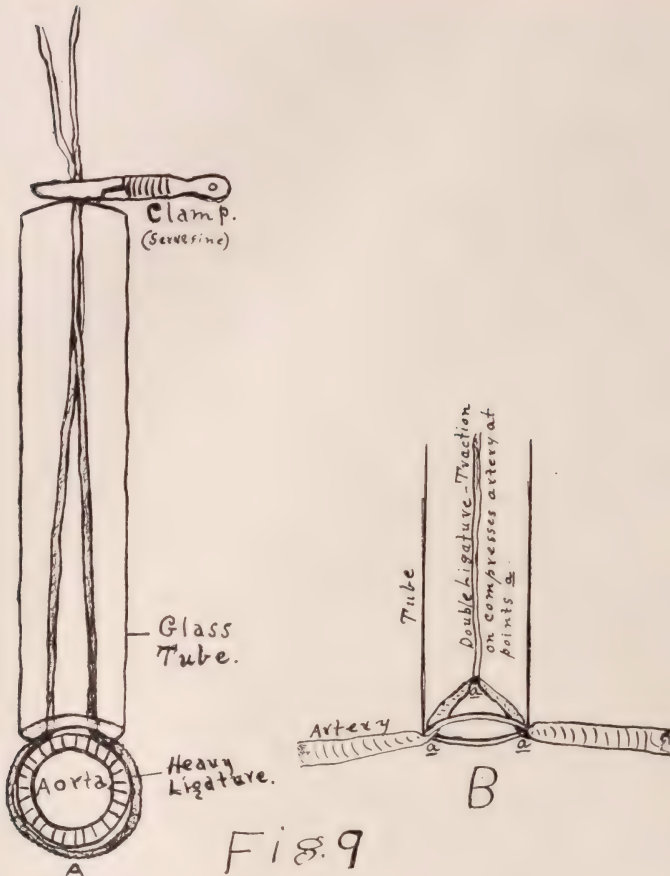


Fig. 9. Method of compressing blood vessels. A. Ligature loosely applied. B. Diagram of effect of traction on ligature.

into the arch of the aorta towards the heart. The external end of the large tube is then connected with a pressure bottle containing the perfusion solution, and the rubber sleeve inflated by means of the syringe

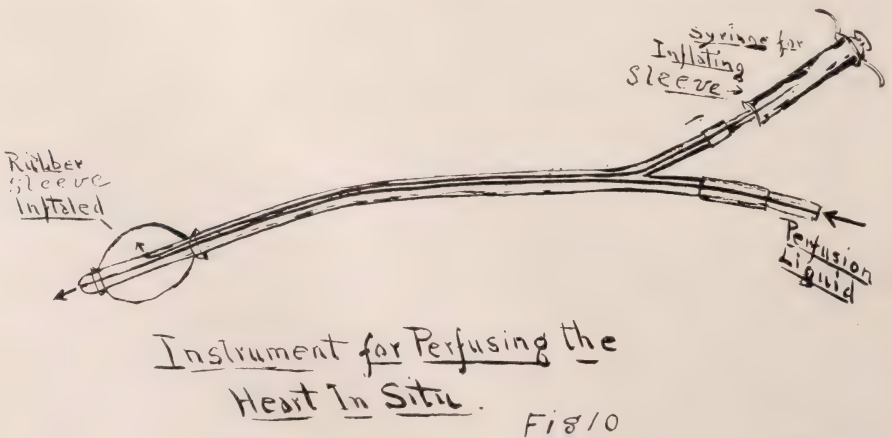


Fig. 10. Instrument for perfusion of the mammalian heart *in situ*.

until the aorta is occluded. The perfusion liquid when turned on will then escape through the open end of the large tube beyond the point of the aortic occlusion and the pressure in the root of the aorta will be raised thereby, resulting in a circulation of the liquid through the coronary arteries.

24. The solution we are injecting into the central end of the common carotid artery is 0.9 per cent. NaCl, at approximately body temperature, and under a pressure of 160 mm. Hg. which is probably not much higher than the normal arterial pressure in such an animal. (See foot note, p. 502.) As before stated, the solution is being mixed with oxygenated blood forced into the root of the aorta by massage of the heart, so that in reality we are perfusing the coronary arteries with dilute arterial blood, which next to whole blood, would seem to be as far as is known, the best possible fluid for this purpose.

25. At the same time the brain and upper part of the spinal cord are being perfused, as some of the arteries supplying these parts are not shut off. This is of extreme importance as the cells of the central nervous system are much more susceptible to, and are more readily killed by anæmia than the cells composing most of the other tissues of the body.²⁷ This is well illustrated by the results obtained with Professor Stewart.²⁸ We found that it was possible to resuscitate cats after as much as 60 minutes of complete anæmia of the upper central nervous system; but after periods of more than 20 minutes, power of permanent return of normal function was apparently lost.

26. As the heart begins to beat efficiently, (Figs. 6A and B) we gradually discontinue the cardiac massage and the injection of the solution. Next the aorta is partially released so that the channel of arterial circulation is widened. As a rule, complete release of the aorta must be delayed until evidence of return of vaso-motor function is observed as the heart may cease to beat from lack of pressure, due to too little peripheral resistance. Return of function of the respiratory and vaso-motor centers ordinarily occurs at about the same time, so that the respiratory movements give us a good index on the state of the vaso-motor center. Artificial respiration should be continued until the automatic respiratory movements become strong and regular. At this time also it is safe to release the aorta completely. (Figs. 6A and B (7); also see Figs. 11A and B (1 to 4).

PROTOCOL I.

Restoration of the Heart *in situ*.

March 6, 1908. Young bitch, weight 6k.

4:18

Etherized dog. Inserted tube in trachea for artificial respiration. Tied a cannula in each of the common carotid arteries. Cut away anterior wall of thorax, exposing heart. Adjusted cardiograph and connected manometer with cannula in left common carotid artery for blood pressure. Smoked drums were used for recording movements of the heart and blood pressure. Speed of the former was slightly greater than that of the latter. The blood pressure tracings, as indicated in Figs. (6, 11, 12 and 13), are labeled A, while the cardiographic

tracings are labeled B. In referring to the figures, the numerals indicating points on tracings are written in brackets.

4:55 Started drums (1).

4:58 Began asphyxiation by stopping artificial respiration (2).

5:03 Last gasp (4).

Note that oscillation of mercury ceased between (3) to (4) on blood pressure tracing, and that contractions of the heart were recorded by the cardiograph to (5). At this point drums were stopped.

5:07:30 Began artificial respiration, cardiac massage, started injection of 0.9 NaCl into right common carotid artery and occluded thoracic aorta by ligature previously placed (blood pressure tracing, Fig. 6A (5a)).

5:14 Massage and injection discontinued (6). Cardiograph adjusted.

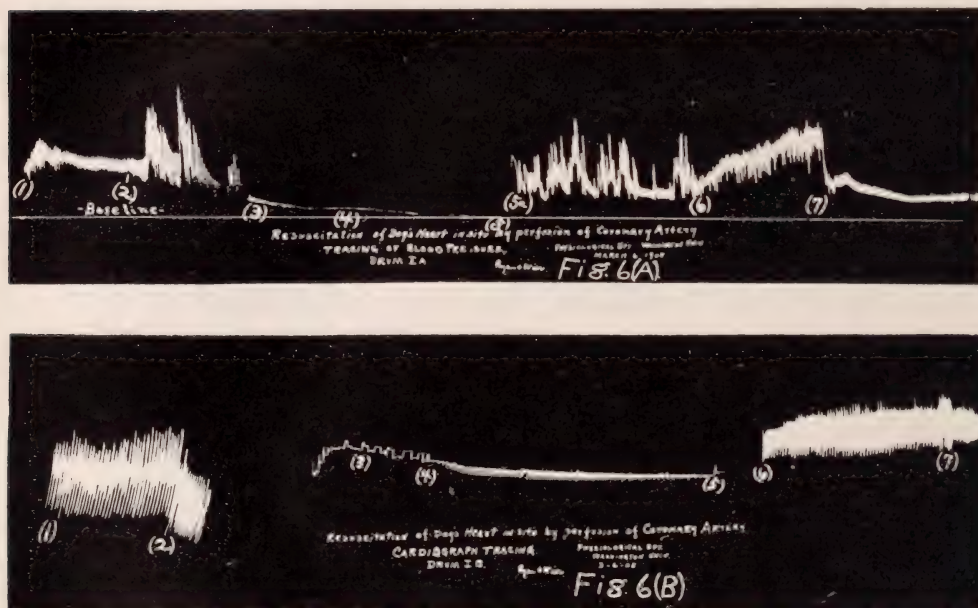


Fig. 6 (A) and 6 (B). Resuscitation of the mammalian heart. A. Blood pressure tracing. B. Cardiogram.

5:17 Released aorta (7). Note accompanying sudden great fall of blood pressure. For efficiency of recovery, compare 11A and B (1) to (2) (blood pressure 90 mm. Hg.) with 6A and B (1) to (2) (blood pressure 60 mm. Hg.).

SUMMARY.

Normal blood pressure 60 mm. Hg.

Period of asphyxiation 11 minutes.

Time for complete resuscitation of heart 6 minutes.

Blood pressure 30 minutes from time of beginning of resuscitation 90 mm. Hg. (or 50 per cent more than before asphyxiation).

Respiratory and voluntary movements, cornea reflex, etc., were thoroughly re-established before this time.

DEMONSTRATION D.

Influence of Occlusion of the Aorta on the Circulation (See Protocol II).

(By Messrs. Barrow and Sewing of our third year class.)

27. The arterioles are normally maintained in a state of tonic contraction, as before stated, by impulses that originate in the upper part of the spinal cord and pass to the muscular fibres situated in their walls over nerves known as the vaso-motors. Owing to this contraction of the muscle fibres, the lumen of the vessels are narrowed and thus increased resistance is offered to the passage of the blood into the capillaries. The arteries, therefore, are unable to empty themselves by their elastic contraction between the beats of the heart and the arterial blood pressure is maintained. In this animal, in which this mechanism is intact, the mean blood pressure as indicated by the manometer connected with one of the common carotid arteries, is about 90 mm. Hg. (Fig. 11A (1) to (4)).

28. A ligature has been placed around the thoracic aorta and the two ends passed through a glass tube of convenient length and secured. By traction upon the free ends of the ligature, the aorta is compressed against the end of the tube. Thus it may be occluded at will. (Fig. 9.)

29. The tissues of the neck are ligatured and divided. Variations in blood pressure may be observed, due to the tying off of the blood vessels and stimulation and division of the nerves. (Fig. 11A (4-5).) Immediately after division of the spinal cord and complete decapitation, there is a marked lowering of the blood pressure (Fig. 11A-(6)) and disappearance of respiratory movements. Artificial respiration is now begun and the aorta is occluded by traction on the ligature previously placed. (Fig. 11A (6a)). There is a sudden and great increase in blood pressure due to the occlusion. On releasing the aorta, there is a corresponding fall. (See Fig. 6A (7)). By adequate occlusion of the aorta, the blood pressure may be maintained for hours.

PROTOCOL II.

Maintenance of the Circulation after Decapitation.

March 6, 1908. Animal employed for resuscitation (Protocol I) was the one utilized in this experiment. Arrangement of apparatus same as in Protocol I, only drums were adjusted for *same* speed.

5:39 Started drums (1) to (2) slow speed; (2) to (3) fast speed; (3) to (4) slow speed.

5:41 Began ligating all tissues of neck (4).

5:44 Sawed head completely off (5) to (6). Cardiographic tracing discontinued at (5). Occluded thoracic aorta (6a) and (6a') and (6a'').

Release of aorta is indicated by (6b) and (6b').

Injected NaCl solution.

5:55 Drums on fast speed (7) to (8).

5:57 Drums removed (9).

6:09 Intrathoracic temperature 31 degrees C.

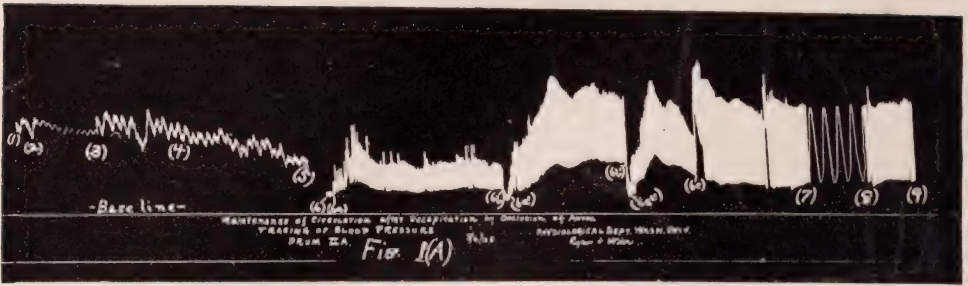
6:10 Started drum (1). Drums on fast speed (2) to (3). Injected more NaCl solution and released aorta (4).

Compressed aorta (5).

Released aorta and injected NaCl solution (6).

Stopped injection (8).

Clamped aorta (9).



11 (A)



Fig. 11 (A) and 11 (B). Efficiency of aortic occlusion (and artificial respiration) in maintaining the circulation after decapitation. A. Blood pressure. B. Cardiogram.

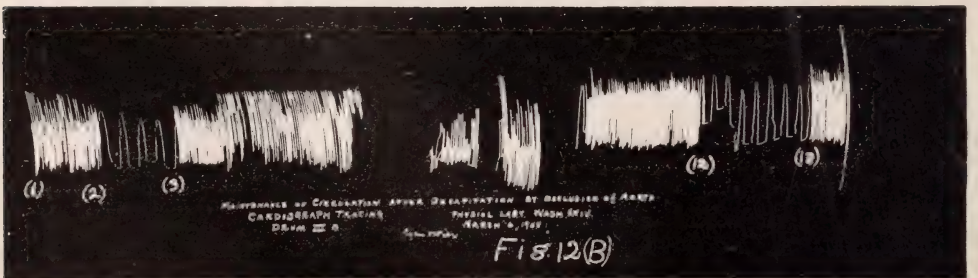
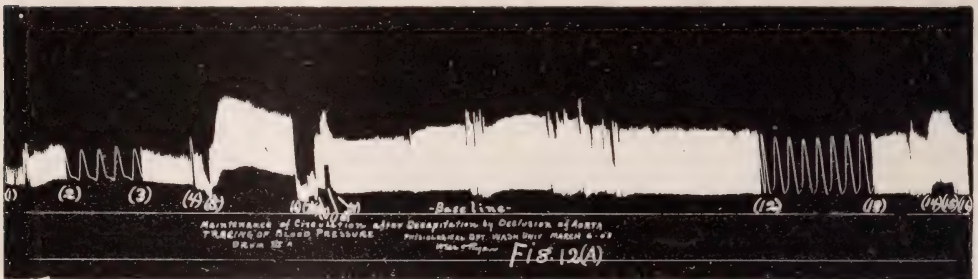


Fig. 12 (A) and 12 (B). See Protocol II. A. Blood pressure. B. Cardiogram.

Footnote: This animal was previously resuscitated (see protocol I, Figs. 6A and B). It exhibited an unusually low blood pressure even before asphyxiation in the first case, as is shown by tracing in Fig. 6A.

Injected NaCl solution (10).

Stopped injection (11).

(Total solution injected in whole experiment less than 1 L. Considerable blood was lost from the intercostal arteries as these vessels were not ligated before removal of thoracic wall.)

Note: This shows greater efficiency of injection with aortic compression than without. Also note the great difference in maximum and minimum and mean blood pressure with and without aortic compression, being far greater in the former. The great pulsatory oscillation (maximum and minimum pressure) is probably due: (1) to vaso dilatation; (2) relative inelasticity of the vessels; and (3) small capacity of arteries to which the circulation is restricted.

Drums on fast speed (12) to (13).

Animal's hind-quarters elevated (14) to (15).

6:27 Stopped drums (16).

6:35 Started drum (1).

Drum on high speed (2) to (3).

Compressed abdomen (4).

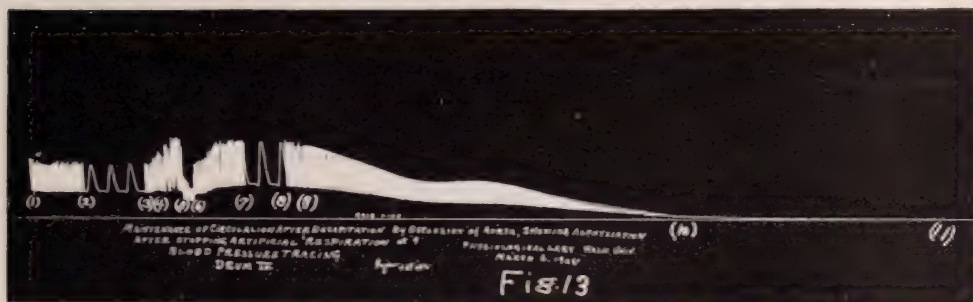


Fig. 13. Effect of asphyxia on blood pressure after decapitation.

Blood Pressure Tracing Showing Effect of Asphyxiation After Decapitation.

Released aorta (5).

Clamped aorta (6).

Drum on high speed (7) to (8).

6:38:30 Discontinued artificial respiration (9).

6:46 Oscillation of mercury ceased (10).

7:01 Last visible heart beat.

Note: The increased heart action after occlusion *following temporary release* of aorta. This may be explained (1) stimulating action on heart of increased pressure in coronary circulation; (2) increase in percentage of blood in circulating medium. It should be remembered a considerable amount of NaCl solution has been injected into this animal, and since the aorta has been occluded most of the time, thorough admixture with blood may not have occurred in the vessels below the point of occlusion. Therefore, when the aorta is temporarily released, some of this blood in the great veins is forced into the active circulation, thus serving to increase the blood content of the circulating liquid. Again, it is conceivable that since the blood in the restricted circulation is not permitted to pass through the abdominal viscera, waste products may accumulate and available food products be removed, so that when the blood from the great veins is caused to enter the active circulation, these conditions may in part be remedied. Other considerations might be brought forward, but since experimental evidence is lacking, further speculation is not profitable.

Attention is called to the rise in pressure and increased heart action following the preliminary fall after cessation of artificial respiration in the decapitated animal, which is shown in Figure 13 between (9) and (10). Whether or not a vaso-motor action is concerned in this phenomenon is not yet determined.

SUMMARY.

The mean blood pressure before decapitation was approximately...	90 mm. Hg.
The maximum blood pressure before decapitation was approximately	100 mm. Hg.
The minimum blood pressure before decapitation was approximately	80 mm. Hg.
After decapitation, with the aorta occluded:	
Approximate mean blood pressure.....	85 mm. Hg.
Approximate maximum blood pressure.....	135 mm. Hg.
Approximate minimum blood pressure.....	35 mm. Hg.
During periods when aorta was released:	
Approximate mean blood pressure.....	17 mm. Hg.
Approximate maximum blood pressure.....	20 mm. Hg.
Approximate minimum blood pressure.....	14 mm. Hg.
After decapitation the circulation was maintained for 54 minutes and 30 seconds, at which time artificial respiration was discontinued and the experiment closed.	

30. After decapitation, vaso-motor tone is lost and ordinarily, even though artificial respiration be given, the blood pressure rapidly sinks to zero. By occluding the aorta, not only may the peripheral resistance be raised to normal or higher, but by restricting the vascular area, the ratio of the mass of blood in the body to the capacity of the vascular system actively concerned, may be increased. Therefore, a better return of blood to the right heart is secured.

31. In this connection it is interesting to consider the mechanism of the results observed on the circulation in the transfusion of blood, a procedure recently revived by Dr. Crile, of Cleveland, Ohio, and which is occasionally employed clinically. In patients receiving a transfusion while their vaso-motor center is intact, as after hemorrhage, improvement in the circulation may be largely due to the increase in the mass of blood in the vessels. By sufficiently increasing the mass of blood above the normal, it is possible to destroy the vaso-motor centers, and yet have the circulation continue for a considerable time. This may be explained by a greater output of the heart compensating for the vaso-dilatation. Under this condition the pressure gradually falls. This, it would seem, may be in part due to a gradual increase in the capacity of the blood vessels after the sudden increase immediately following destruction of the vaso-motor center; and to escape of liquid from the blood vessels. The latter may occur through the kidneys, or directly through the walls of the blood vessels, as it is known that both foreign blood as well as vascular dilatation favor these processes. If more blood be transfused, the pressure may be restored to near its former level.

32. The practical application of influencing the blood pressure by mechanically increasing peripheral resistance is no doubt so well known to you that it would be unprofitable to go into the details of its application, such as compression of arteries, including the aorta, bandaging, etc. Possibly in certain classes of cases it might be more generally employed to advantage, e. g. in those where rapid increase in the peripheral re-

sistance of the arteries is indicated. But we trespass, as it is in the province of the surgeon and physician to make such applications.

33. Before leaving this subject, your attention is called to the error of attempting to efficiently perfuse the coronary arteries by injecting into the carotid without the occlusion of the aorta. For efficient coronary perfusion, it is necessary to get a pressure in the root of the aorta approaching normal blood pressure. To do this by the procedure just mentioned, it would be necessary to inject the liquid at a very high pressure as it readily escapes through the dilated arterioles into the capillaries and thus into the veins, leading to increased venous engorgement. To efficiently start a quiescent heart by this method would require such a volume of liquid that, to say the least, even if the heart could be started, serious embarrassment of the circulation would result. The injection of some powerful vaso-constricting drug along with the solution under these conditions would of course tend to increase the peripheral resistance and thus hinder the escape of so great a volume of the perfusion liquid into the veins. But, in principle, it is a much less simple method than the one just demonstrated.

34. We have endeavored to present to you only the relation of certain physical conditions to the circulation and, for lack of time, we refrain from going into the very interesting subject of the employment of drugs in restoring and controlling the circulation.

We might add, however, that as long ago as the autumn of 1902, we employed intra-arterial injection of adrenalin for these purposes but the known ill results of its injection were such as to discourage its use for permanent resuscitations. We have investigations under way in the endeavor to discover a reliable and efficient drug to use in such cases, but for the present we prefer not to state the results, since they are as yet incomplete and, therefore, inconclusive.

PART II.

A Consideration of Some Phenomena Observed After Alterations of the Circulation.

Introduction.

In taking up this part of the subject, we shall not go into the history of suture of the blood vessels farther than to say, that until 1905, when Carrel and myself perfected a successful method, no method had been reported that gave anything like constant good results.

Carrel has been endeavoring to unite blood vessels for several years with indifferent success, both in France and in this country.

Almost from the beginning of our work together, we got a very high percentage of successful results, and since we have been working independently, the same is true. Our work together was done in the Physiological Laboratory of the University of Chicago.

Method.

35. Since successful vascular anastomosis depends largely on the use of needles and thread of size in accordance with the vessels, very little need be said. We have here some of the needles and thread used in the

work. The needles are No. 16 cambrics and the threads are single strands of Chinese twist silk, the thread of which is made up of six such strands. Any long fibred thread will answer, provided it is fine enough and sufficiently strong. The needles and threads are sterilized in paraffine oil which I find much superior to vaseline, which we formerly used. No doubt any relatively inert oily substance would do as well, as far as the results are concerned. The blood vessels are handled with sufficient care to avoid injury to their walls, especially the intimas. Excess of blood is removed from the lumen of the vessels between the cut ends and the point of temporary hemostasis by sponging or washing with 0.9 NaCl solution. The former method is quite efficient and convenient. Hæmostasis on medium sized vessels is conveniently accomplished by means of ordinary serrefines (bull dog forceps). The vessels are protected from excessive drying by applying paraffine oil. This does not appear to be entirely without action on the tissues, but since uniformly good results have attended its use, and as it is very nice to use and keeps in-

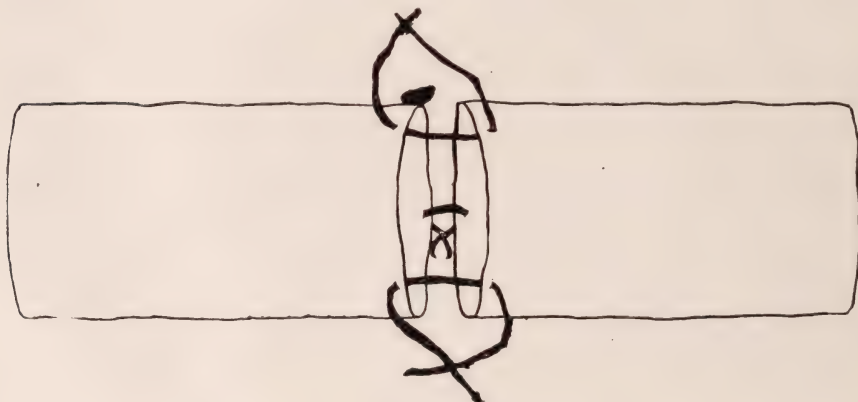


Fig 14

Fig. 14. Showing fixation of ends of divided blood vessels preliminary to suturing.

definitely, we see no reason for trying anything else for the purpose at present.

The actual mechanical suturing is simply the old and well known method of suturing divided tubular structures together, by placing three fixing ligatures at equi-distant points on the circumferential margin of the cut ends, (Fig. 14) each ligature being passed through corresponding points on both vessels, thus rendering approximation of the two ends simply a matter of tension on the ligatures. (Fig. 15) The ligatures are commonly tied and then the marginal intervals between the three are sewed together by continuous stitches. (Fig. 15) The aim is to get good approximation of the endothelial surfaces, and if each stitch be made to pierce each intima, this is readily accomplished.

The threads are impregnated with oil or vaseline before use, partly with the view of decreasing the chance of thrombosis, but mainly in order that their manipulation will be facilitated, and "sawing" of the

walls of the vessels which may occur with untreated threads, be avoided. Also, with the untreated thread there is danger of the outer loose adventitial tissue adhering to the thread and being drawn into the lumen of the vessel. This danger is largely obviated with the oiled threads. We may look upon the use of threads impregnated or coated with some oily substance mainly as permitting the use of larger threads than would otherwise be advisable.

36. As a rule the circulation in end to end anastomosis (Fig. 16) is excellent. But even with skilled technique, small thrombi may be laid down at points on the line of union of the intimas, presumably due to slight unevenness between their edges. Unless there be a gross fault in the technique, these small thrombi, which probably consist largely of

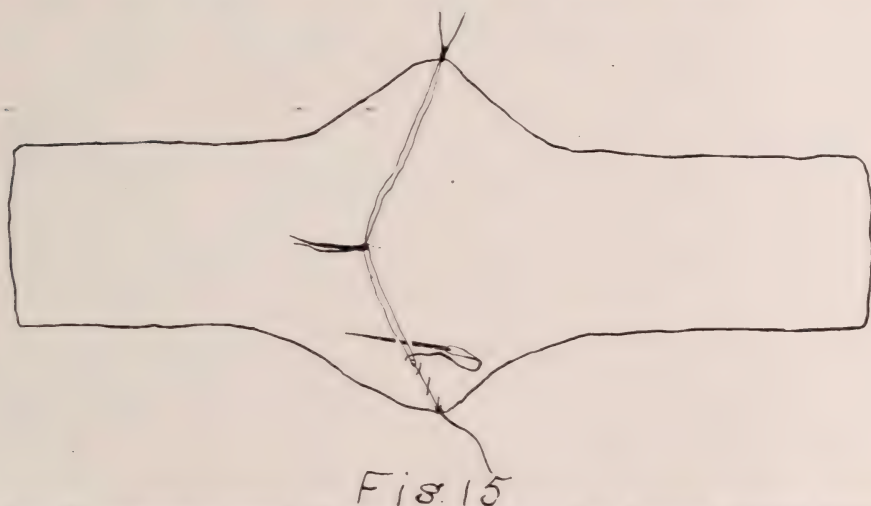


Fig. 15. Showing method of approximating edges and suturing divided blood vessels.

blood plates (personally suggested by Dr. Kemp) are limited to relatively small masses, so that in large or medium vessels they do not hinder the circulation to any considerable extent. But in relatively small vessels, their presence may be sufficient to seriously hinder or even stop the circulation.

37. To obviate at least in part this difficulty, the following operation devised to increase the area of the cross section of the vessels at the line of anastomoses (Fig. 17) and described in the accompanying protocol, is proposed:

Protocol III.

May 29, 1907.

Both common carotid arteries of a dog were cleanly dissected, doubly ligated and cut. The left was cut nearer the head than the right. The central end of the left and the peripheral end of the right were then crossed over the median line of the neck so that the ends lapped by about 2.5 cm. During the operation, the vessels were held in place by traction on the free ends of the ligatures which had previously been placed upon

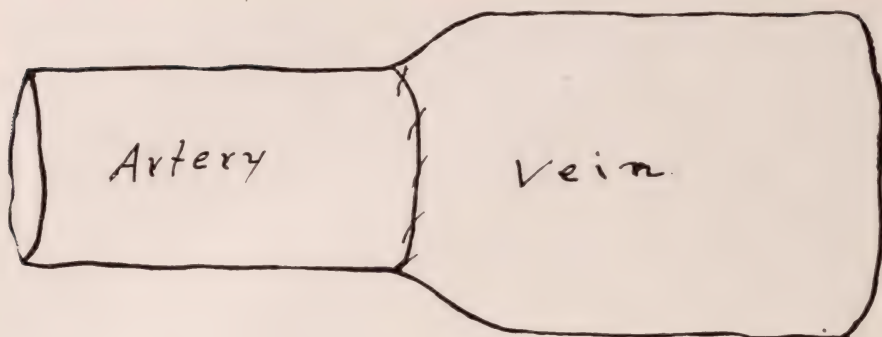


Fig. 16

Fig. 16. End to end arterio-venous anastomosis.

the vessels. A free end of each ligature on the ends of the vessels were threaded into needles and carried through the underlying tissues and thus brought out and tied to the corresponding free end. This served to anchor the vessels in place and to relieve the anastomosis in a large measure of the longitudinal strain. With curved scissors, an elliptical area was removed from each artery about 1.5 cm. from the end so that the resulting openings faced and approximated each other. Four corresponding points on the circumference of each opening were then fixed by as many ligatures after which the edges around their entire circumferences were stitched together. The wound was then closed. The animal made an uneventful recovery.

December 19, 1907, etherized dog. Examined vessels at point of anastomosis. The circulation was excellent.

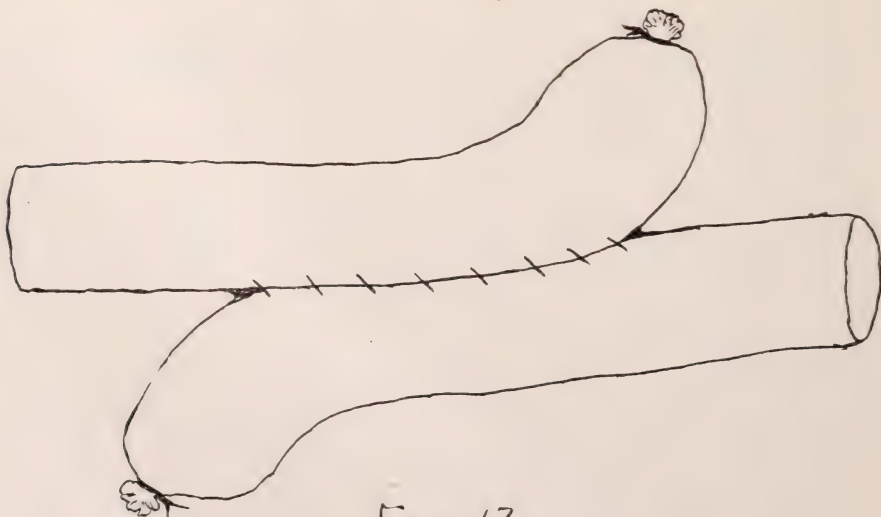


Fig. 17

Fig. 17. Termino-lateral anastomosis of blood vessels.

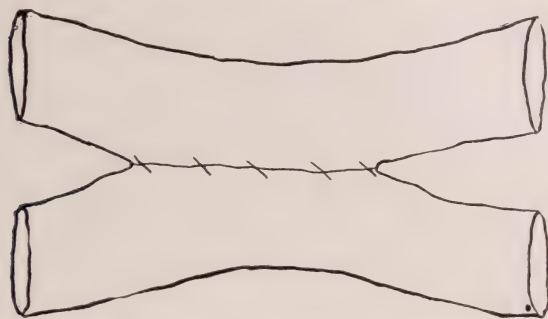


Fig. 18. Latero-lateral anastomosis, (as in Eck's fistula).

Upon removing the specimen and opening it by a longitudinal incision, the lumen was found to be entirely free of obstruction and the intima continuous and smooth.

From this it will be seen that, in itself, the operation is successful. Experiments on relatively small vessels are now being made. By using this technique, it would seem, for reasons already stated, that small vessels may thus be more successfully anastomosed than by the direct end to end method. Also successful anastomoses may perhaps be more easily accomplished on medium sized arteries, by the laboratory investigator of average skill, by this method than the ones used hitherto. In no

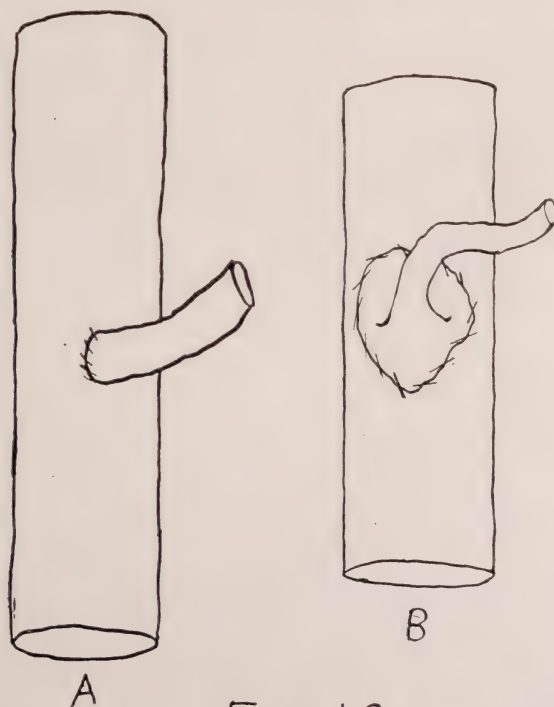


Fig. 19

Fig. 19. Termino-lateral implantation of blood vessels. A. Direct. B. By "patching," i. e. by removing an area of the "parent" blood vessel surrounding its mouth.

sense, however, is it intended to supersede direct end to end anastomosis when the latter is practicable; since end to end anastomosis on medium sized vessels is, for the practiced operator, somewhat simpler and more rapid and gives excellent permanent results.

Physiological and Morphological Results of Transplanted Blood Vessels.

38. When blood vessels, e. g. the carotid arteries, are anastomosed end to end *in situ* no change is observed in the histological structure of the walls.²⁹ If the central end of an artery, e. g. the common carotid be anastomosed to the peripheral end of a vein, e. g. the external jugular, the result is usually some alteration in the structure of both artery and vein, evidenced in the former by a decrease, and in the latter, by an increase in the thickness of the wall.³⁰ Dog No. 1, in which this operation was performed more than thirty months ago, exhibits active reversed circulation in the external jugular vein.

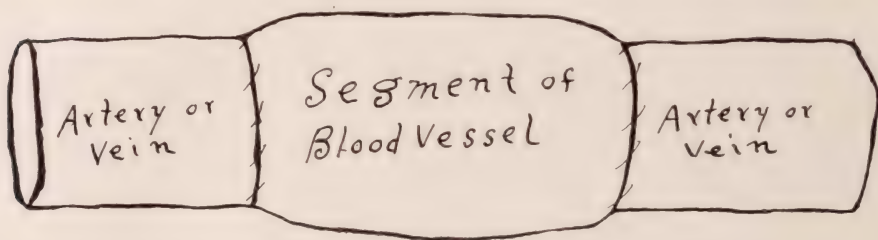


Fig. 20. Interposition of a segment of a blood vessel between the cut ends of another.

In rapid transplantation of segments of blood vessels (Fig. 20), in animals of the same species with only a short interval of anemia of the segment,³¹ as well as in heterotransplantations,³² marked histological changes occur as a rule in the segments consisting of a widening of the lumen and a thickening of the wall.³³ Dog No. 2, in which a segment of cat's abdominal aorta was interposed and sutured to the ends of the right common carotid artery, shows a good circulation through the segment after almost one year. The segment has become enlarged and thickened.

39. Even in the simpler operation of end to end anastomosis of artery on to vein, two important factors must be considered in accounting for these changes, namely, (a), alteration of the functional circulation consisting of a change of pressure in the lumen of the vessel; and, (b), alteration of the circulation in the nutritional capillaries, i. e. in the vasosorum.

In the case of rapid transplantation of a segment of blood vessel in the same animal, in addition to the above, three more conditions must be considered, viz. (c) complete abolition of the circulation in the nutritional capillaries; (d) complete abolition of the lymphatic circulation; and (e) complete severance of nervous connections; while in the case of iso- or hetero-transplantations, still another factor must be added, (f) in the former the possible, and in the latter the probable toxicity of the host's body liquids for the segment.

40. The transplantation of a segment of rabbit's aorta between the cut ends of a dog's common carotid artery may be taken as an illustration of the magnitude of the histological changes that may occur and yet the mechanical function of conveying blood remain adequate. Three weeks after the operation direct examination showed considerable enlargement and thickening of the segment.³⁴ After eight months the enlargement both in diameter and length was much greater and also the thickness of the wall, yet the mechanical functioning was good. The gross arterial appearance of the segment was vastly changed, the walls being greatly hardened and transparent. The intima was perfectly smooth and glistening. On section the increased thickening of the wall was found to be in a large part due to an increase in the fibrous tissue. Here, then, we have excellent preservation of mechanical function, notwithstanding very great alteration in physical and histological structure. Similar results are being observed in a dog into which a segment of cat's abdominal aorta was transplanted, more than ten months ago.³⁵

41. In another case a segment of dog's abdominal vena cava preserved in 2.5 per cent. formalin (in 0.9 per cent. NaCl) for 60 days was used. The day before the operation, the segment which was about 0.75 cm. long and 0.5 cm. in diameter, was removed from the formalin solution, washed in dilute ammonia, dehydrated in absolute alcohol and impregnated with paraffine oil. It was interposed between and sutured to the cut ends of the right common carotid artery of a medium sized bitch. (Dog No. 3.) The diameter of the artery was considerably less than that of the venous segment.³⁶

The animal made a rapid and uneventful recovery, the wound healing promptly. Clinical examination 22 days after the operation revealed a strong pulsation on the course of the artery at the site of the transplanted segment. The following day, the neck was opened and the vessel directly examined. The segment was found to be about 1.5 cm. long and .75 cm. in diameter. It pulsated strongly and the circulation through it was excellent. The walls appeared to be slightly thickened but pliable. In appearance it resembled similar segments previously transplanted immediately after removal. The wound was closed and the animal returned to its cage. On the 37th day after the operation, clinical examination gave the same results as on the 22nd day. No extensive histological studies have as yet been made, but material is being accumulated for that purpose.

42. The question naturally arises, therefore, do the cells of the segments of blood vessels actually survive, and by their growth and multiplication, account for the histological changes observed, or do they to a greater or lesser extent perish and only preserve the mechanical function of the segment and serve as a bridge for the ingrowth of other cells after which they suffer degenerative and absorptive changes?

The work of Eiselberg,³⁷ Christiani,³⁸ and others would lead us to conclude *a priori* that even when replaced in the same animal from which it was removed, only a thin layer of the outer cells in such a transplanted segment of blood vessel could survive. As to the intima, I know of no results obtained under exactly comparable conditions, that

is, transplantation of similar tissues into blood vessels. The results of Busch and Van Bergen³⁹ on survival of cells of the suprarenal tissues transplanted into the spleen might possibly be quoted in favor of survival of the intimal cells.

But in the case of the transplanted formaldehyde-fixed segment it is hardly conceivable that any of the cells could have survived. Yet after a considerable interval it performs the mechanical function required of it and macroscopically differs not greatly from what would be expected of a fresh segment transplanted in similar fashion.

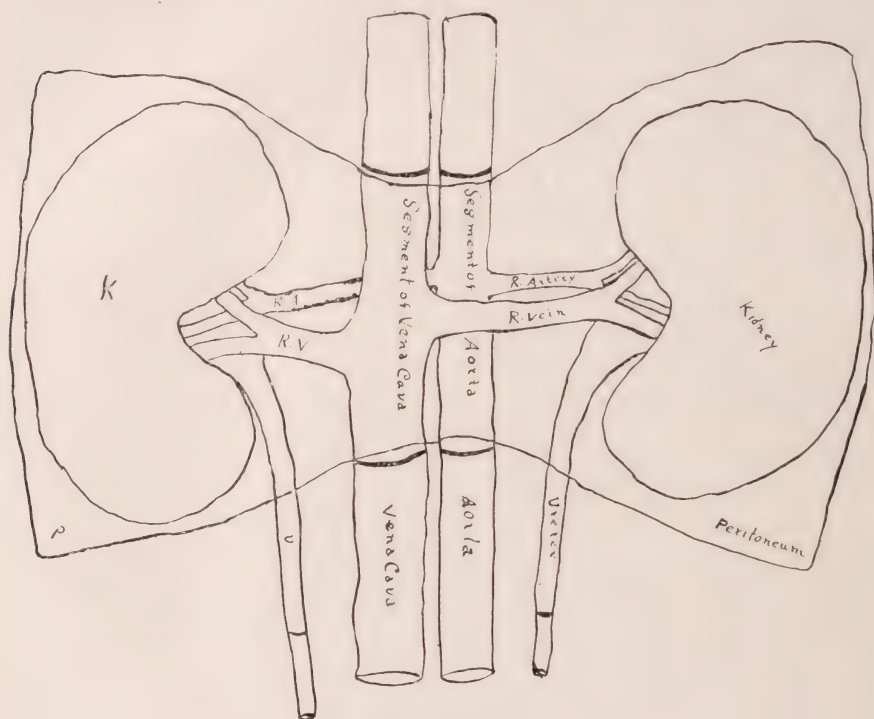


Fig. 21

Fig. 21. Showing method of transplanting in mass.

The problem is one of great complexity and until a very material addition to the present data is made, conclusions and generalizations should be held in abeyance, or if uttered, disregarded.

Results in Other Tissues After Alterations in the Circulation.

43. The results observed after alteration of the circulation to parts may be illustrated by reversal of the circulation in the thyroid gland. Dog No. 4 had the right thyroid lobe removed and replanted with reversal of the circulation August, 1905.

No symptoms attributable to the operation, except a temporary swelling of the lobe operated upon, have been observed. Now, to clinical examination, the operated gland appears to be somewhat smaller than the unoperated.

In the case of reversal of the circulation in goitre in dogs, or by

reversing the circulation in one of the thyroid veins, very marked results have been observed.

44. In dog No. 5 the right inferior thyroid vein and corresponding carotid artery were divided and the central end of the artery sutured to the peripheral end of the latter, thus causing a reversed circulation of arterial blood in the vein. At the time of the operation the animal presented a bilaterally symmetrical goitre. Now the lobe on the unoperated side appears unaltered, but on the operated side there has been a very decided decrease in size.

Histological specimens from similar cases show a relatively dense structure and larger proportion of colloid material on the operated side compared to the unoperated.

45. By utilizing the "parent" blood vessels (see Fig. 21) a procedure first proposed to, and carried out with Carrel, the study of transplanted organs whose blood vessels are of such small size, or of anatomical arrangement as to render their direct anastomosis difficult, or even impossible with our present technique is rendered possible. The kidneys of a cat are a good example. (Fig. 21.) By utilizing the aorta and vena cava, good circulation through the kidneys has been obtained by us,⁴⁰ while direct anastomosis of the renal vessels on cats has not given satisfactory results. On larger animals no doubt direct anastomosis of the renal vessels may easily be made.

46. Results of removal and replantation of the thigh⁴¹ are very interesting, but lack of time forbids their presentation.

47. As yet we are not in possession of enough results to warrant the drawing of conclusions as to the ultimate value of such alterations of the circulation or of organ transplantations to surgery.

In closing I desire to express my thanks to the President and other officers of this Society for their courtesies; to the audience for their presence and attention, and to my assistants and students for their co-operation.

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A REVIEW OF VAGINAL FIXATION OF THE UTERUS WITH
THE REPORT OF A SUCCESSFUL CASE.*

By FRANK A. GLASGOW, A. B., M. D., of St. Louis.

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As you are all aware, some kind of abdominal suspension has been the regular procedure in operating on procidentia uteri for some years past.

All these have appeared to me, to be wrong in principle and not particularly good in practice. In combination with perineal repair I, like others, have been guilty of so operating. It is an unnatural position, whether the uterus is fixed to the abdominal wall or drawn forward by the round ligaments. In any kind of suspension there must be much traction. We all know that a continual drag on a scar will end in that scar stretching. The round ligaments, in my opinion, were never intended for a support to the non-pregnant uterus, but only to act as stays to prevent the pregnant uterus from rotating. We all see cases where such attachments have pulled loose.

The only other procedure fashionable at present is removal of the uterus. I never could see the reason for this latter operation. How any one who knows how a swollen, hypertrophied uterus will shrink when held within the vagina, will advocate its removal, is beyond my comprehension. The mere weight of the organ can have nothing to do with the prolapse. Hysterectomy for this complaint has always appeared to me an irrational procedure. It will cure procidentia only when the perineum is repaired and the upper end of the vagina fixed to the broad ligaments, or abdomen. I think no one will deny this. We know that it can be cured by a high perineorrhaphy, and attachment of the upper end of the vagina to the pelvic fascia and broad ligaments. Hence the hysterectomy is not necessary. We can get the same results and restore the parts to a more normal condition by not removing the uterus.

Statistics of the result of the two operations are at hand only in regard to the perineal operation and vaginal fixation, and naturally these are not recent.

Pozzi quotes Hegar as reporting 400 cases with two deaths. Dorff, his assistant, looked up the results in 63. Of these 53 were well, nine of whom had borne children. There were ten failures, two of whom had borne children. Hegar in 150 cases had only one failure in three and a half years. Certainly a very excellent result. In Schroeder's clinic they had 67.5 per cent. of cures.

According to Pozzi, ventrofixation only holds the uterus forward, and is not better than shortening the round ligaments. This is also the opinion of others. Tait says, "for complete procidentia, perineorrhaphy is by far the best treatment and its results are generally permanent," a statement I cannot make concerning any other plan I have tried. Pen-

*Read before the St. Louis Surgical Society.

rose states, "the operation of ventrofixation is a useful adjunct in some cases. This operation is not intended to furnish a mechanical support to the uterus but only to keep it in a position of anteversion. In rare cases the uterus may be removed. This operation should not be proposed hastily. A plastic operation should be done more than once before resorting to it." Byford says, "seldom is a vaginal fixation without antefixation of the fundus per abdomen successful." This does not accord with the statements of the above quoted authors, or many others, besides Sims.

Garrigues reports that Munde cured a bad case by separating the cervix from the surrounding tissues and then amputating by the hot wire. The resulting cicatrix binding the vagina to the bases of the broad ligaments held up the vagina. Garrigues thinks that only in cases resisting every other measure should hysterectomy be done. Ashton mentions as operative procedures, only abdominal fixation and vaginal hysterectomy with fixation of the vagina in abdominal wound. Gilliam mentions Freund's silver wire encircling method of narrowing the vagina, also hystero- and ventrofixation.

Penrose is getting nearer my ideas. He calls attention to the immense shrinkage that takes place in vagina and uterus following rest in bed. He recommends that in repairing the perineum the denudation in the lateral sulci should extend high up the posterior vaginal wall in order to diminish the calibre of the vagina. He performs also a cystocele operation. This shows that although he was aware that he got better results from a high denudation, he thought it was because he narrowed the vagina more. He further says that Emmet's operation seems to be inefficient and in such cases the following operation is useful. "This consists in denuding a triangular area on the posterior vaginal wall, the apex being immediately below the cervix and the base at the ostium vaginae. The denudation should extend well on the vaginal walls. The denuded area is closed by sutures passed transversely."

Emmet's operation for the repair of the perineum, in spite of the praise bestowed on it by many good men, is in my opinion not to be compared to a high flap operation, commonly termed Tait's. Penrose apparently recognized this, yet still thought that the main object was narrowing the vagina. I myself have not done a cystocele operation for many years as I find it unnecessary. You will notice that all either use a perineal operation, in which the denudation extends high on the sides, or else get a denudation in the cervical locality in another way.

We see this also in the earlier operators. Marion Sims was as honest a man as ever graced our profession. He tells how he really blundered on to the fact that if two denudations were made, one on either side of the cervix, the cervix would be held back and the fundus kept in position and show little tendency to go backward. He operated on many cases with his triangular or trowel shaped denudation of the anterior wall and had only one failure, and even this one was cured by a subsequent similar operation.

In this operation the two upper ends of the denudation were on either side of the cervix. The lower part of the operation was practically an

operation for cystocele. In one case of Emmet's the lower part failed and only that part in front of the cervix held. Sims in speaking of this case says, "The fold thus formed (as in a sling) had retained the organ perfectly in place although below a cystocele existed. Future experience must demonstrate how far the formation of this fold can alone be relied on under the circumstances, yet it is evident in many cases this will prove all that is necessary to retain the uterus *in situ*."

Dr. Sims thought that he was holding up the uterus by narrowing the vagina. He evidently did more than this. He must have passed his sutures deep into the denuded areas and thus secured the fascia, and perhaps the base of the broad ligaments.

Many of his followers, probably being guided by the cuts, which could not show the depth of penetration of the needle, may have sewed only the mucous membrane. Of course this would fail. Sims says that he had only one failure by this operation and that was in the case of a debilitated old woman. This case even was cured by a subsequent operation.

In my limited research, Dudley is the only man who has the true idea of the method to be pursued in restoring the uterus to its normal position. He ascribes to Reynolds, of Boston, the suggestion of utilizing the base of the broad ligaments as a point of suspension. He performs intentionally what was done unknowingly by Sims and others when they denuded around the sides of the cervix and coapted the denuded area in front of it, in this way bringing together in front of the cervix the bases of the broad ligaments. Dudley describes and pictures his operation very lucidly. To quote in short his description: He incises the vagina on the left of the cervix around in front to the right side; he now makes a median incision from this cut to near the meatus urinarius; the vagina is now separated from the base of the bladder, also from the tissues near the base of the broad ligaments. He now cuts away the redundant part of the mucous membrane of the anterior wall of the vagina. Next, two sutures are passed through the base of the broad ligament on the left and brought around in front of the cervix and passed through the base of the right broad ligament. When these are tied they bring the bases of the two broad ligaments together in front of the cervix, at the same time forcing this part of the uterus backwards. (I believe this procedure also shortens the sacro-uterine ligaments. F. A. G.)

The slit in the anterior wall is now closed, the lower part being closed transversely. In this way the uterus is tilted forward and hence shows little disposition to retrovert, at the same time the vagina is attached to the base of the broad ligaments and cannot prolapse. The operation which I report is essentially that of Dudley, but with some additional procedures which make it still more certain of success.

I first attached the cervix to the end of the blade of the speculum as Dudley recommends and find it an excellent suggestion. My incision around the cervix and down the vagina was made as Dudley suggests but did not extend so low toward the meatus urinarius.

I separated the vagina from the base of the bladder and the base of the broad ligaments, as Dudley did, but also separated the uterus from

the bladder, which he did not do. This was done in order to get a ligature through the fundus to hold it forward, as is done in vaginal fixation of the fundus. I now passed two chromacized ligatures through the bases of the broad ligaments and tied them in front of the cervix. The cervix was forced far back by this procedure. I next brought the fascia on either side of the vagina beneath the bladder, together under the bladder. In this way I got support from the fascia for the vagina and thickened the vagino-vesical septum.

After doing this as far as the lower end of the cut, I draw taut the thread holding the fundus forward and fasten it to the vagina. Now the cut in the anterior wall of the vagina was sewed. I did not remove any of the redundant mucous membrane of the vagina as Dudley does.

It is many years since I have removed mucous membrane from the anterior vaginal wall for cystocele. I have found that it is not necessary. Whenever the anterior wall is supported by a properly made perineum the cystocele will disappear. I now made a high Tait operation on the perineum, denuding high on either side of the vagina. I used buried sutures passed from side to side, and in this operation did not remove the flap. It is not only not necessary, but the posterior ridge formed acts as a pessary and holds up the cystocele until it disappears from shrinkage. The high denudation on the sides gets the fibres of the levator and assists materially in supporting the parts. In this way you can get as thick a perineum as you want.

There are some points in this operation which I think should be emphasized: First. Do not operate too soon. Hold up the uterus with tampon or pessaries until the parts are in good, healthy condition and have undergone as much involution as you may expect. It is marvelous to what extent and how soon involution takes place. Second. Get the bases of the broad ligament together. Third. Get the fascia on either side of the vagina together. Fourth. Draw uterus down toward this thickened fascia, but not far. Fifth. Leave all mucous membrane intact, both on anterior and posterior wall. Sixth. Get the fibres of the levator together.

The patient upon whom I operated was a very fleshy woman. The uterus was entirely outside of the vagina and the vagina inverted. As is usual in such cases the vagina and cervix were greatly hypertrophied and the cervix eroded. There was also some laceration of the cervix, which I did not think needed repairing. There is now (one and a half years after the operation) no protrusion of cervix, rectum or bladder, either on straining or standing. The anterior lip is readily felt at the upper portion of the perineum, but to reach the os externum you must go high and far back. The fundus is felt forward. The patient wore a Hodge pessary for a short time after the operation. She has been very comfortable since. Some things are forgotten in medicine and surgery and I believe vaginal fixation is one of them.

I believe that many of us will live to see the day when uterine suspension in any form will be considered poor surgery for the repair of an uncomplicated case of retroversion or procidentia uteri.

FIBROMA OF THE TRACHEA.

By WILLIAM E. SAUER, M. D., of St. Louis.

Fibromata as well as other new growths of the trachea, are not common occurrences. The majority of our American text books of the diseases of the nose and throat make no mention of them. Von Bruns, in his article on the neoplasms of the trachea in Hymann's *Handbuch der Laryngologie und Rhinologie*, states that tumors of the trachea are comparatively rare. He found among his records 300 laryngeal, and only 7 tracheal tumors. His review of the reported cases shows only 102 benign, and 45 malignant neoplasms of the trachea. Schech states in his *Krankheiten der Kehlkopfes u. d. Luftröhre*, that new growths of the trachea may be classified as rare diseases. Moritz Schmidt found among 58,879 nose and throat patients which had come under his observation during 18 years, only 7 new growths in the trachea. Semon found among his classified reports of 10,000 benign laryngeal neoplasms, only one tracheal tumor to every 100 laryngeal. The case which I shall here relate is therefore deemed to be of sufficient interest to report in detail.

Charles B., age 74, a retired police officer, born in Germany, was referred to me on January 6, 1906. He had always enjoyed good health with the one exception, that he had had some trouble with his right eye, which was removed in 1882. (I learned later that this was a sarcoma of the conjunctiva; the enucleation had been performed by Dr. Alt, of St. Louis.) Since that time he had always enjoyed good health.

The family history is negative. For the past 5 or 6 months he had been more or less annoyed by an irritative cough, but this had not disturbed him in any degree until about a month ago, when the cough began to annoy him when lying down. He also noticed that there was considerable difficulty in breathing and he would become very short of breath when walking up a flight of stairs. He consulted his family physician, who diagnosed his trouble as a chronic bronchitis. The patient was given small doses of potassium iodide, but his cough became more aggravated, disturbing him greatly at night. The breathing became more difficult, and at times it seemed as though he could scarcely breathe at all. On examination I found him to be well nourished, weighing about 180 pounds; he claimed not to have lost any weight. The respirations were distinctly audible, and stertorous in character; his voice was somewhat hoarse. The slightest exertion brought on an attack of dyspnoea. The laryngoscopic examination revealed nothing abnormal in the larynx; but in the trachea a mass could be distinctly seen situated just above the bifurcation on the anterior wall; occupying at least two-thirds of the lumen of the trachea. The surface of the tumor was uneven and appeared somewhat pale. Considering the age of the patient and the appearance of the tumor, I suspected it to be malignant. I observed the patient for a few weeks and made repeated examinations; I also

attempted to make a direct examination with the Killian tracheoscope, but found that the patient could not stand this examination. During this time the cough had been getting more severe and the breathing more embarrassed; even the slightest exertion brought on an attack of dyspnoea. The patient found that he could rest more comfortably when lying on the abdomen. I had been seriously considering an attempt at removal of the growth under a general and local anæsthesia, but was deterred from this upon the advice of the internist who saw the case with me. He strongly advised against any operative interference owing to the advanced age of the patient and the presence of a well-marked myocarditis. The dyspnoea became so alarming and the patient was beginning to be very nervous, and insisted on having something done.

He was sent to the hospital and on February 12th a low tracheotomy was performed under primary chloroform anæsthesia. While on the table it was very difficult for the patient to breathe, and the tracheotomy had to be performed very hurriedly. After the trachea had been incised the respirations suddenly ceased and the patient became pulseless, and markedly cyanotic. Knowing that the obstruction was low down in the trachea, I quickly introduced a Killian bronchoscopic tube into the trachea, with the idea of passing the obstruction, so as to allow the air to pass through the tube. As soon as the tube had reached the vicinity of the bifurcation there was a sudden expiratory effort, and a portion of the growth was expelled through the tube; a second mass quickly followed. The patient began to breathe and the cyanosis began to disappear. Heart stimulants were administered and the pulse could be felt at the wrist. After a few minutes the patient's condition was fairly good. I attempted to get a view into the trachea, but owing to the rather profuse hemorrhage this was impossible. I then withdrew the tube and the hemorrhage gradually ceased. The patient developed a small pneumatic patch in the right lower lobe, which cleared up in about two weeks. There was a marked improvement in the breathing, and there was no dyspnoea; the tracheotomy wound was allowed to close. The patient soon regained his former health.

The method of procedure I had intended to follow was to introduce a Killian tube down to the mass and remove it with a cold snare, which I had had made for the purpose; or failing in this I intended to remove it piecemeal with the biting forceps of Killian. The two masses which were expelled through the tube were about $1\frac{1}{2}$ cm. long by $\frac{1}{2}$ cm. thick. They were cherry red, and had the macroscopic appearance of a papilloma. They were given to the pathologist, Dr. Gradwohl, who reports as follows:

"I beg to report that microscopical examination of the growth removed from the trachea submitted to me by you fails to reveal any signs of malignancy. The growth appears to be a simple polypus covered with normal mucous membrane, and showing a very slight amount of round cell infiltration. Fibrous tissue predominates in it. I made sections from three different places, all showing about the same picture. A slight deposit of hemosiderin was observed in some places."

The patient left the hospital on March 4th. An examination revealed

that there was still a mass on the anterior wall of the trachea, occupying nearly one-half of its lumen. The patient claimed that he felt no inconvenience and there was no shortness of breath, even after exertion. A month later I noticed that there was a slight increase in the size of the growth, and it appeared to be extending upward along the anterior wall, but not encroaching on more than half the lumen of the trachea. The general health of the patient is surprisingly good. On December 28, the patient again returned stating that he had noticed during the last few weeks, after an exposure, that there was considerable difficulty in breathing, especially at night. The examination showed that there had been a considerable increase in the size of the growth, and that the upper portion of the growth seemed to have extended up as far as the 5th or 6th ring, and occupied more than half the lumen of the trachea. An examination of the chest reveals an acute bronchitis. The patient was given a sedative, and when I saw him on Jan. 3, there was a decided improvement both in the cough and the breathing, although there was no noticeable change in the trachea. At the present time the patient weighs nearly 200 pounds.

Von Brun's review of the literature in 1898 shows that up to that time, only 23 cases of fibromata of the trachea have been recorded. Since that time only 6 cases have been added to this list; including the case I have just reported, making 29 in all. I shall review these cases briefly, in the chronological order of their report.

CASE 1. The first fibroma which is also the first new growth of the trachea recorded, is the case reported by Lieutaud, in 1767. The case was that of a boy, in which a polypus with a long pedicle, having its origin in the trachea, had been carried into the glottis by the expiratory air current, causing sudden death.

CASE 2. Stallard reports the case of a man aged 40 years, admitted to the hospital April 25, 1843, in a condition of general weakness, with symptoms of bronchitis. He had been asthmatic a long time. Patient died four days after entering the hospital after a fit of coughing which lasted an hour. Autopsy showed emphysema of the lungs. The bronchioles were healthy, but the right and left divisions of the trachea were congested. In the trachea there was a polypus about the size of an almond.

CASE 3. Reported by Rokitansky. Patient female, age 35 years; mother of two children. Had noticed a change of voice for 4 or 5 years, and finally at intervals lost her voice entirely. In March, 1844, had a spell of suffocation; there was dyspnoea and pain upon making an effort to cough. A polyp was discovered between the cords and another further down in the trachea. A tracheotomy was performed and a cannula was inserted; the patient made a good recovery but the voice remained the same. A few months later the patient died of a follicular enteritis. Autopsy showed that the original fibroid had been attached to the trachea just below the larynx.

CASE 4. Smoler reports a case, male, age 22, well nourished. Some years before had had an attack of catarrhal pneumonia during which, hemoptysis with febrile symptoms had occurred. Later on these symp-

toms were reproduced without any apparent cause. The patient was almost constantly suffering from asthma; an examination of the lungs by percussion revealed a tympanic sound in the right clavicular region. Auscultation revealed some rales; the heart was hypertrophied, the abdominal organs were normal. There was short breathing and palpitation when ascending stairs. Violent fits of coughing, cyanosis, and sweats with purulent expectoration. Patient has a good tenor voice and was able to sing. Parents had died of "lung disease" at advanced age. Autopsy, lungs filled with reddish brown fluid; no evidence of tuberculosis. Bronchi dilated and filled with fluid. Heart cavities slightly dilated. The finger introduced into the trachea encounters a tumor the size of a large nut, which completely obstructed the organ. It has a broad base and extends from the 1st to the 7th cartilage. Diagnosis: fibroma of the trachea was confirmed by microscopic examination.

CASE 5. Reported by Fifield. The patient was first seen at her confinement in 1857, then 16 years old and healthy. Father asthmatic. Two years later began to have attacks of asthma, which increased in severity until January, 1860, when well marked symptoms of hysteria developed. The asthmatic paroxysms were remarkably severe. In March of the same year there was severe cough with bloody expectoration. Bronchial rales were heard all over the chest and the case was diagnosed as a tubercular condition. For several months the patient had not been able to lie down, but slept in chairs. On August 20, 1860, she developed measles, after which she remained in better health through the winter and spring. In July, 1861, the patient began to lose ground rapidly. She became very pale, dyspnoea became more marked and the feet and ankles were swollen. Auscultation showed besides the usual rales a well marked "bruit de diable" in the neck. Patient died on July 14, 1861. The autopsy showed, the heart healthy, lungs free from tuberculosis; no emphysema. The right bronchus presented superficial erosions. The smaller divisions were filled with semi-purulent mucus. Upon examining the left bronchus the opening could not be found at first. It was perfectly covered by a firm rosy polypus the size of a small grape. The pedicle was attached to the trachea at the mouth of the bronchus, acting as a ball valve, allowing expiration but forbidding inspiration.

CASE 6. Tuerck had observed a patient, age 37, in private practice. There had been little difficulty in breathing. The patient died of phthisis. The autopsy revealed a tumor 6 mm. long, by 2 to 4 mm. thick, situated in the upper part of the trachea attached to the posterior wall. The diagnosis was confirmed by the microscope.

CASE 7. Reported by Gerhardt. Female, age 34. Never had any respiratory difficulty. In November, 1864, the patient died of acute yellow atrophy of the liver. At the autopsy there was found situated above the bifurcation at the level of the 8th ring somewhat to the left, a small polyp $\frac{1}{4}$ cm. wide, by 1 cm. long.

CASE 8. Also reported by Gerhardt. A girl aged 25 was first observed in 1853. The first symptoms noticed were a shortness of breath, which gradually increased; followed two weeks later by a cough. In the

middle of October her breathing was much embarrassed. She was compelled to go to bed; keeping the upper part of her body elevated. She complained of pain in the breast and right side of the neck. The voice was deep and hoarse. A laryngoscopic examination in March revealed a reddish tumor in the trachea near the 6th ring on the left side, only a small space was left for respiration. On March 29 a sound was passed. The breathing became more labored and the cough aggravated. On March 31, the dyspnoea increased, with cyanosis and bloody expectoration. Her condition grew worse and she finally died April 5th. The autopsy showed an acute bronchitis, emphysema of the lungs and some oedema. The tumor was 3 cm. long, by $1\frac{1}{2}$ cm. wide; the pedicle was 2 cm. in length.

Mackenzie reports the following four cases of tracheal fibromata:

CASE 9. Male, aged 41, entered hospital in March, 1865, with hoarseness and slight dyspnoea. The larynx was found congested, and was treated with astringents. On October 16th a growth was seen about the size of a bean, occupying the 2nd and 3rd ring of the trachea. In November several unsuccessful attempts to remove it with a forceps were made, but on December 21, 1865, the growth was touched with electric cautery; one week later no sign of it could be seen.

CASE 10. Female, age 10. First applied at hospital suffering from dyspnoea and weakness of voice. A growth about the size of a pea was seen on the 3rd ring of the trachea, rather to the left side of the median line. On attempting to remove the growth with the cautery, the patient moved and both cords were injured. The patient did not return for further treatment.

CASE 11. Age 37, was seen in March, 1874. He was suffering from dyspnoea and hoarseness. A growth was seen just above the anterior commissure, which was removed with the forceps; a growth about the size of a currant was then seen occupying the 1st and 2nd ring of the trachea. The cricoid cartilage could be distinctly seen above it. After two failures the polyp was touched with the galvano-cautery; a week later no sign of it was seen.

CASE 12. Male, aged 45, applied at the hospital on June 15, 1876, suffering from dyspnoea. A smooth red polyp about the size of a grape was seen covering the 4th, 5th and 6th rings of the trachea. A tracheotomy was proposed but refused. The patient died three months later of apoplexy. No post mortem.

CASE 13. Man, age 63, was first seen by Ingals in 1881, with symptoms of laryngitis. In February, 1883, the author discovered a growth in the trachea 4 to 5 cm. below the larynx. It was sessile and flattened in form, standing out from the surface of the trachea about 5 mm. and occupying an area ranging from 8 to 12 mm. in its various diameters. It was of a reddish color and granular. There was no inconvenience in breathing and no noticeable size of the tumor when seen six months later. There was no attempt at removal.

CASE 14. Reported by Stoerk. This case was that of a midwife 40 years of age, who had difficulty in breathing. A laryngeal examination revealed a fibroma the size of a bean in the upper part of the trachea.

The patient refused a tracheotomy, so was allowed to go without further treatment.

CASE 15. This case, reported by Masini, has been considered a typical one. It was a fibro-myxoma situated upon the 1st ring of the trachea and on phonation could be seen below the cords. It was extirpated through the mouth with a modified Mackenzie's forceps under cocaine anæsthesia.

CASE 16. Lewin presented a patient who had been wearing a tracheotomy tube for 24 years. The patient had always been perspiring, coughing and subject to fits of suffocation. The laryngoscopic examination revealed a redness and swelling of the vocal cords and a fibroid tumor which grew out from the posterior wall of the trachea. After the tracheotomy the patient showed great improvement, could speak well and breathe well. Further operation was refused by the patient.

CASE 17. Langlet mentions a case of a man, age 60, who was seen in 1886 with marked symptoms of obstruction, cough and pain on swallowing. He also complained of a feeling of foreign body in the throat. The voice was hoarse. Auscultation revealed generalized mucous rales. No abnormal signs were detected by percussion. The patient was given *jaborandi* in two gram doses, which seemed to relieve him for a time. A laryngoscopic examination showed no foreign body nor tumor of the vocal cord. The patient began to have severe attacks of suffocation and succumbed July 14, 1886. The autopsy showed a small white lobulated tumor the size of a small nut 3 cm. above the bifurcation of the bronchus. A part of this tumor had become detached and fixed itself in the larynx, causing a rapid asphyxia.

CASE 18. Braun reports a case, male, age 40, sent to the author in February, 1889, by Dr. Escher with a diagnosis of tracheal polypus complicated with laryngeal troubles. The history showed that the patient had been hoarse for ten years without any other noteworthy symptoms. He began to have a feeling of pressure in the throat, constant coughing and dyspnoea when lying down or sleeping. The hereditary history of the patient was negative. Inspection showed a short thick neck "and highly arched tongue." The opening of the larynx was narrow, the breathing was labored. Upon deep inspiration it was possible to see a thick white tumor 1 cm. below the anterior commissure, which moved backwards and forwards. It was found that a 20 per cent. solution of cocaine not only would not anæsthetize the growth but produce hyperæsthesia. Five weeks later the author removed the growth with a forceps. The patient made an uneventful recovery and there was no recurrence.

CASE 19. Reported by Oazmann, in which a polypus of the larynx and of the trachea was extirpated at one time. This was followed by a recurrence. Laryngotomy and cauterization were next done; this was also followed by a recurrence. The removal was then made through the mouth and the patient given potassium iodide internally. No recurrence after five years. The age not stated.

CASE 20. Bidwell showed to the Pathological Society of London a specimen of a fibroid polypus of the trachea. It was taken from a boy

five years of age who died from asphyxia at the Evelina Hospital for Children. The polypus was the size of a small marble and was attached to the posterior wall of the trachea by a distinct pedicle. On microscopic examination the growth was found to consist of fibrous and cellular elements without any distinct evidence of sarcoma, except that some of the nuclei appeared to be becoming spindle shaped. There was no sign of disease in any other organ; the child had suffered from symptoms for fourteen days and tracheotomy had been performed without relief two days before death. This was the first case of fibroid polypus of the trachea shown to the Society.

CASE 21. Avellis reports a case, male 50 years of age who had been suffering for a long time with a large struma and marked difficulty in breathing. The author was called because the patient had coughed up some blood. Pharynx and nose hyperemic. The left vocal cord was paralyzed and fixed. The larynx was markedly scoliotic, and the trachea involved lower down. The author discovered a body which moved upon breathing but an accurate examination could not be made. The source of the hemorrhage was not discovered. A few days later the patient developed symptoms of pneumonia. The autopsy showed that the left vocal cord was somewhat atropic and fibrous. Near the 7th and 8th tracheal ring the polypus was seen; it was like the whole of the tracheal mucosa, somewhat red, not bleeding and could be moved easily by the sound. Later examination revealed a beginning sarcoma.

CASE 22. Krieg in his *Atlas der Kehlkopfkrankheiten* gives an illustration in which a fibroma situated just above the bifurcation on the posterior wall of the trachea almost obstructing the entire lumen. I was unable to find anything further regarding the case.

CASE 23. Schmidt in speaking of fibroma of the trachea in his *Krankheiten der Obern Luftwege* refers to Tuerk's and Stoerk's cases, and then states that Boeckenhimer had seen a lympho-fibroma in the trachea which was operated upon with good results.

CASE 24. Eppinger reports the case of a man age 23 who had died suddenly; a round tumor as large as a hazel nut was found on the posterior wall of the trachea 4 to 5 cm. above the bifurcation. The diagnosis was verified by the microscope.

CASE 25. Jurasz reported a case of a male, age 38 years, who had been suffering from hoarseness of a slight degree for more than a year, but which in the last two months had become troublesome. The breathing was somewhat impaired. On laryngoscopic examination a polypus the size of a small hazel nut could be seen which had its origin in the trachea. The growth moved with each inspiration and expiration. No attempt at removal had been made.

CASE 26. Rosenfeld mentions a case in which a polyp the size of a pea, having its origin on the anterior wall of the left bronchus, which after an attack of coughing could be seen lying over the bifurcation.

CASE 27. Ogle reports a case of a child one and one-half years of age, admitted to the hospital apparently in good health, but was readmitted the same day with dyspnoea. The mother said the patient had several "spells of short breathing" on the way home. A second tracheotomy was

done and the patient died. A tumor was found attached by a pedicle at the site of the first tracheotomy. The author believes that the asphyxia might have been due to a cold after leaving the hospital; or it might have been due to a spasm. The tumor seems to have been a fibroma.

CASE 28. Marcel and Zigura report a case of fibroma of the trachea in a patient aged 33. The tumor was the size of a hazel nut. It was removed and no recurrence followed. The tumor was examined by Babes, and pronounced "a typical fibroma."

An analysis of the reported cases shows that fibromata may be found at all ages. One patient was below 2 years; three patients between 5 and 15; three between 20 and 30; seven between 30 and 40; three between 40 and 50; two between 60 and 70, and one over 70; in eight the age was not stated. The sexes are about equally divided. Eleven of the cases were males, and seven females, and in ten the sex was not recorded.

The size of the growths varies from that of a small pea to that of a large nut. In the case of Smoler, the growth completely obstructed the trachea. The location of the tumors was also a variable one, as they were found in all parts of the trachea. In one of Mackenzie's cases the growth was attached to the first ring of the trachea. In Rosenfeld's case the origin of the growth was in the left bronchus.

The symptoms varied from a slight hoarseness, weakness of voice, cough, dyspnoea, asthmatic symptoms, attacks of suffocation and asphyxia, ending in death. In nine of these cases death had occurred from suffocation. The amount of disturbance depends on the size and location of the growth. In Langlet's case there was a feeling of foreign body which the patient attempted to cough up; this cough was followed by spells of suffocation. In Rokitsky's case there was pain in the chest on coughing. In Smoler's case there were symptoms of catarrhal pneumonia without fever; these attacks were brought on without any apparent cause. In Braun's case there was hoarseness for ten years without any other symptoms. Fifield's case showed marked asthmatic symptoms for more than three years and the case was believed to be tuberculosis. In Ingal's case, a growth situated 5 cm. below the larynx and extending 5 mm. out from the surface of the trachea and occupying an area varying from 8 to 12 mm. in its various diameters, produced no symptoms. In four cases reported by Mackenzie the growths varied in size from a small pea to a grape. In all the cases there was a noticeable dyspnoea with hoarseness.

A positive clinical diagnosis was made in sixteen of these cases; the others were diagnosed on the post mortem table. Five of the cases were recorded before the discovery of the laryngoscope; these were diagnosed at the autopsy. Tuerck was the first to see a tracheal growth in the laryngeal mirror. With the further development of the direct methods of examination more of these cases will be recorded.

A histological examination was made in only nine of the cases. In Ogle's case the growth had its origin at the site of the tracheotomy wound, and as a histological examination was not made this case was in all likelihood a granulation tumor, and not a true new growth. In the

case of Avellis a beginning sarcoma was discovered later. In Bidwell's case some of the nuclei appeared to be becoming spindle shaped. This seems to bear out the statement of Proebsting that no conclusions should be drawn from a macroscopic appearance of these tracheal growths. He reports a case in which a polyp with a small pedicle had been coughed up and brought to him by the patient. Proebsting could distinctly see the remaining portion of the pedicle in the trachea. The macroscopic appearance was that of a typical mucous polyp; a microscopic examination, however, revealed carcinomatous elements in the interior of the polyp. The patient died nine months later of carcinoma of the trachea and left lung. In the case reported above by me, sections were made by four different pathologists, and no evidence of malignancy was found in any of the slides examined.

Attempts at removal were made in only six of the cases. In Braun's and Massini's cases the growths were removed through the mouth by forceps; they were situated high up in the trachea. In Oazmann's case the growth was first removed with the forceps through the mouth. A recurrence followed. A thyrotomy was done followed by a second recurrence. A third removal was made through the mouth and proved to be successful. In two of Mackenzie's cases the growths were destroyed by the galvano-cautery. In one case reported by Mackenzie the vocal cords were injured in attempting to cauterize the growth; further attempts were then refused. In Lewin's and Ogle's cases a tracheotomy was done, but no attempts at removal were made. In Gerhard's case a sound was introduced into the trachea; death followed several days later. In my own case a partial removal was done with relief for eleven months. The patient is still quite comfortable.

Regarding the prognosis of these tumors, the cases of Proebsting and Avellis should again be borne in mind, and a careful microscopic examination should not be neglected, even when the macroscopic appearances are typical. A great advance in the operative technic of these cases has been made through the development of tracheoscopy and bronchoscopy, as done by Killian and others. With the aid of these the removal of the growths situated low down in the trachea or even in the bronchi themselves is no longer an impossibility.

Humboldt Building.

THE FLANNEL ROLLER-BANDAGE IN THE TREATMENT OF UMBILICAL HERNIA IN THE INFANT.*

By A. S. BLEYER, M. D., of St. Louis.

The small umbilical hernia that so frequently appears between the sixth week and third or fourth month of life can doubtless be prevented by the use of the belly-band in the hands of the careful and intelligent mother, in the majority of cases.

It is probable that rupture at this point is most likely to be seen in those babies that have not been so protected. Again, it seems to be in this class of patients that attacks of persistent hard crying or coughing are allowed to continue without inquiry into their cause. It is in this class that we see rickets and marasmus and diarrhoea.

Whatever the anatomical or mechanical starting point of these acquired herniæ may be, their course is usually benign, they most frequently disappear of themselves, since the condition is far less often seen in childhood than in infancy. It is uncommon to see an umbilical hernia in youth or even childhood, and it is very common indeed to see them in infants, especially in dispensary practice. Kerley states that ten per cent. of babies under six months of age seen in dispensary practice have umbilical herniæ. This percentage likewise obtains in those babies coming to our clinics.

The recovery that occurs in the majority of these cases can not be said to be due to treatment, since the majority are not treated at all by the general practitioner. They are therefore benign and tend to recover. For many clinical reasons some treatment is nevertheless indicated and the most rational treatment would seem to be to prevent the recurrence of the extrusion until the ring has closed with the growth of the child.

The use of a spring steel truss can not be considered in this region, because of the variation in the size of the abdomen that may occur from hour to hour in the infant. The use of any apparatus of fixed size, whether made of leather or steel would be undesirable for the same reason. Furthermore the application of pressure by means of a hard substance at this point is attended by danger, because of the deficient vitality of the surface tissues. Lastly, the use of a button made of wood, ivory or some metal does not seem rational; point pressure is essentially bad, it must interfere with circulation and must therefore tend to defeat the very purpose of treatment.

It has doubtless been for these reasons that pediatricists have largely adopted the use of adhesive-plaster strips or the abdominal binder in these cases. Most writers seem to favor the zinc oxide adhesive strips placed either entirely around the body of the child or only a few inches to each side of the navel.

The disadvantages of the adhesive strips are, that since they must be worn for at least four months they are sure to cause skin disturbances,

*Read before Bethesda Pediatric Society, March 20th, 1908.

which are occasionally extremely troublesome. If they are used they must be changed at least every two or three weeks, and must be replaced in approximately the same area each time, that is transversely across the abdomen. It is possible to cross them diagonally over the navel, but they can not do very much good in this position, since they will wrinkle with the movements of the child, after the first few days. Again, the adhesive strip interferes with the bathing of the child, and it is out of the question to remove it every day or two for this purpose.

Observation of a few cases and closer study of a more recent one have made me think that the ordinary abdominal binder that is also often used is not an adequate means of preventing the recurrence of the extrusion. The abdominal binder never remains smoothly in place, it is too broad over the abdomen and is displaced by the thigh flexions and constant movements of the child. The use of shoulder straps, adjusted by pinning and not by sewing is an aid and do help to maintain the desired immobility of the binder. The use of perineal straps is wholly impracticable, they can not be made to fit properly about the thighs for obvious reasons, they can not be kept clean and they are a constant source of irritation at points that are especially exposed to inflammation from other causes.

To solve these difficulties I have made use of a rather narrow roller bandage of moderately heavy flannel. Flannel was selected because of its general advantages for belly-bands in infants and because of the fact that it is more snug-fitting and that one layer can not slip when applied snugly over another layer.

A bandage of two to two and a half inches in width and sufficiently long to make three and a half turns of the body answers the purpose very well. It is applied by spreading one end upon a table and so placing the child upon it in the recumbent position, that the free end can be brought forward to a point above the iliac spine, directly opposite the navel. This end is now used as a point of resistance in applying the first turn of the roller-end of the bandage, which is made to pass exactly over the navel and to grasp the opposing part of bandage as it completes the first turn. Holt and others recommend that a fold of skin from the sides of navel be turned in after the omphalocele has been replaced.

The first step in the application of the bandage must be made firmly, but not tightly and with precision, the second layer of the bandage must now pass a little less than an inch lower than the first, so that its upper margin well covers the umbilicus, the third layer passes one inch above the first layer, so that when the bandage is in place, we have a belt of three layers of flannel, about one inch wide, passing over the navel and the remainder of the abdomen covered by a single layer which takes the place of the ordinary belly-band.

The support remains in place very well and there are no appendages to be dealt with, besides this, pressure symptoms will not occur and the bandage can be adjusted and readjusted according to the needs of the case, once the mother has carefully studied the principle of its use.

The application of the method requires dexterity, intelligence and constant watchfulness, and if these are obtainable in a given case, it should be followed by good results.

MEDICAL AND SURGICAL PROGRESS.

THE NEW CONJUNCTIVAL AND CUTANEOUS TESTS FOR TUBERCULOSIS.

A REVIEW OF RECENT LITERATURE.

By ALBERT E. TAUSSIG, M. D.

1. DIE WISSENSCHAFTLICHE UND PRAKTISCHE BEDEUTUNG DER OPHTHALMODIAGNOSTIK DER TUBERKULOSE.—Citron (*Deutsch. med. Wochenschr.*, 1908, No. 8).
2. KONJUNKTIVALREAKTION IN DER UROLOGIE.—Necker and Paschkis (*Wien. klin. Wochenschr.*, 1908, No. 5).
3. DIE PROGNOTISCHE BEDEUTUNG DER KONJUNKTIVALEN UND KUTANEN TUBERKULINREAKTIONEN.—Wolff-Eisner (*Berl. klin. Wochenschr.*, 1908, No. 2).
4. UEBER KUTANE UND KONJUNKTIVALE TUBERKULINREAKTION.—Stadelmann (*Muench. med. Wochenschr.*, 1908, No. 2).
5. OCULAR TUBERCULIN REACTION IN CATTLE.—McCampbell and White (*J'l of Exp. Med.*, 1908, March).
6. DIE OPHTHALMOREAKTION AUF TUBERKULIN ALS DIAGNOSTISCHES HILFSMITTEL.—Plehn (*Deutsch. med. Wochenschr.*, 1908, No. 8).
7. BEITRAEGE ZU DEN NEUEREN UNTERSUCHUNGSMETHODEN ZUR ERKENNUNG DER TUBERKULOSE.—Levi (*Berl. klin. Wochenschr.*, 1908, No. 5).
8. NACHTEILE UND GEFAHREN DER CONJUNCTIVALEN TUBERKULINREAKTION.—Collin (*Medizin. Klinik*, 1908, No. 5).
9. UEBER EINE DIAGNOSTISCH VERWERTHBARE REAKTION DER HAUT AUF EINREIBUNG MIT TUBERKULINSALBE.—Moro (*Muench. med. Wochenschr.*, 1908, No. 5).
10. VERGLEICHENDE UNTERSUCHUNGEN MIT DER KONJUNKTIVALREAKTION NACH WOLFF-EISNER UND DER SALBENREAKTION NACH MORO.—Heinemann (*Muench. med. Wochenschr.*, 1908, No. 11).

Conjunctival test: Instil into one eye, one drop of a one per cent. solution of tuberculin. A slight conjunctivitis indicates a positive reaction.

Cutaneous test: Inoculate, as in ordinary vaccination, the patient with a trace or dilute (1 to 4) tuberculin. A positive reaction is shown by the appearance of a small papule at the site of inoculation.

Ever since v. Pirquet announced his cutaneous test for tuberculosis and Calmette and Wolff-Eisner their conjunctival methods, medical literature, especially in Germany, has been filled with discussions of these tests. A more or less complete summary of the publications on this subject in 1907 will be found in the January issue of this journal. So much new work has been done since that time, however, that it seems worth while to go into the matter once more. On the whole the conjunctival method has had the best of it, the cutaneous method having excited much less interest. Citron (1) whose experience with the conjunctival method is extensive, enthusiastically maintains its diagnostic value. He has worked out a technique of his own in which he uses only old tuberculin made according to Koch's directions and freshly diluted.

He instils one drop of a two per cent. solution into one eye. If the reaction is positive, he instils a drop of a one per cent. solution into the other eye. A positive reaction here also is strong evidence in favor of the presence of tuberculosis. If, however, the first reaction was negative, he instils one drop of a four per cent. solution into the other eye. A negative reaction here speaks against the presence of tuberculosis. Where the first and second tests fail to agree the significance of the reactions is dubious. He considers the presence of any ophthalmic disease a contraindication to the application of the test and in scrophulous children, where the reaction is often excessive, he advises the use of dilutions not stronger than one fourth of one per cent. Necker and Paschkis (2) find that in urologic cases the conjunctival test is almost pathognomonic. They tested a large number of cases of suspected renal tuberculosis both by the conjunctival method and by injecting the urinary sediment into animals. Whenever animal experiment proved the presence of urogenital tuberculosis the conjunctival test was positive and vice versa. They advise that in every case of pyuria or hematuria in which a tuberculous process is suspected, the conjunctival test be done and believe that thereby animal inoculation can be dispensed with.

The discoverer of the conjunctival method, Wolff-Eisner (3), considers the diagnostic value of his test established but maintains that it has also a prognostic value. He believes that the intensity of the reaction is a measure of the resisting power of the body so that where the power of the individual to resist the tuberculous process is great, the reaction will be strong and vice versa. Thus he finds that in incipient tuberculosis and in more advanced cases with a good prognosis the reaction is marked. In the terminal stage of the disease and in those early cases that do badly, the reaction is weak or even negative. Reactions that are delayed in their beginning and prolonged in their course are usually found in individuals that show no clinical evidence of tuberculosis. Stadelmann (4) agrees with him in this estimate of the prognostic value of the test. He prefers the conjunctival to the cutaneous method if only because healthy individuals react positively to the former in only one-sixth, to the latter in over one-half of all cases.

McC Campbell and White (5) find the conjunctival reaction useful in testing cattle. It produces, if positive, a conjunctivitis as in human beings and permits the observer to dispense with the troublesome close observation of the animal, the taking of temperatures and the like. Moreover, animals seem to react to the conjunctival test when, on account of previous injections of tuberculin, they fail to react to renewed injections. Further observations, however, are required before the new method can displace the old.

In the chorus of approval there is, however, no lack of dissenting voices. Plehn's (6) experience with the conjunctival method has not at all convinced him of its value. He objects in the first place that many plainly tuberculous individuals fail to give a positive reaction, a statement in which all observers agree. But what is worse he obtained a positive reaction in a considerable proportion of non-tuberculous patients. Thus two out of five cases of typhoid, two out of five cases of scarlet fever, six out of twelve cases of rheumatism, three out of six with acute bronchitis and several cases of enteritis reacted positively. None of these patients showed any evidence of tuberculosis. Moreover unpleasantly severe reactions were not uncommon. Phlyctenular keratitis, corneal opacity, severe purulent blenorrhœa occasionally resulted, though permanent ill effects were never observed. He considers the reaction not specific and not harmless and continues to prefer the older method of

subcutaneous injection. Similarly in 120 cases of surgical tuberculosis, Levi (7) obtained a positive conjunctival test in only 69 per cent. and often observed a severe conjunctivitis, once even a purulent ophthalmia, so that he, too, has discarded the method. Collin (8) saw five serious and obstinate, though not permanent, ocular lesions out of thirty cases tested by the conjunctival method. He also advises against its general use. Heinemann (10) concedes the diagnostic value of the method but has not found that information of prognostic value can be obtained from it. He believes that a negative reaction in unquestionable cases of tuberculosis does not necessarily mean a bad prognosis. Twice a negative reaction in incipient phthisis seemed to be due to a severe anemia and once to no ascertainable cause. All three cases are doing well. He, too, occasionally observed severe conjunctivitis following the test, once lasting two weeks.

Apparently each method has its advantages and its disadvantages. The cutaneous method of v. Pirquet if positive has in adults comparatively little significance but if negative speaks strongly against the presence of tuberculosis except in those advanced cases in which the diagnosis is clear without its use. This method has the advantage of being absolutely harmless and of never incommoding the patient beyond the slight pain of the inoculation and a mild itching or burning if the test is strongly positive. The conjunctival method on the other hand is more significant if positive and possibly has a more or less definite prognostic value. It, however, occasionally produces unpleasant after-effects and should be used cautiously, if at all, in scrophulous individuals or in those with ophthalmic disorders. Neither test is absolutely pathognomonic and neither can replace close clinical observation and the usual laboratory methods. Both, however, stand as valuable additions to our diagnostic armamentarium. Koch's original method of injecting tuberculin hypodermically produces much more definite results than these newer methods whether positive or negative. It often, however, produces severe and unpleasant general reactions (fever, pain, malaise) and is entirely inapplicable, when there is any fever.

Moro (9) has modified v. Pirquet's method in an interesting manner. Instead of inoculating the patient with dilute tuberculin he rubs into the unbroken skin a tuberculin ointment. The latter is prepared by rubbing up together equal parts of tuberculin and warm lanolin, thus making a fifty per cent. ointment. If kept on ice it remains active indefinitely. A piece of ointment the size of a pea is rubbed into the skin of the epigastrium and allowed to remain there without any dressing. If negative no reaction whatever occurs; a positive reaction is shown by the appearance of nodules or papules at the site of enunction. Moro calls a positive reaction weak if a few reddish nodules appear without itching, moderate if many (100 or more) reddish nodules are seen with slight dermatitis and a little itching, strong where there are many large and small nodules, considerable dermatitis and much itching. A strong reaction is rare, occurring in only 3 out of 37 tests. Moro has used the method only with children but for them has found it quite as specific as v. Pirquet's and in clinically healthy children giving a positive reaction less frequently. It is entirely harmless and never produces any general reaction. Heinemann (10) has been able to confirm Moro's results and endorses his method without reserve.

THE PRESENT STATUS OF OPHTHALMIC-DIAGNOSIS OF TUBERCULOSIS.

A REVIEW OF RECENT LITERATURE.

By CARL FISCH, M. D.

1. CUTANE UND CONJUNCTIVALE TUBERCULIN INJECTION.—M. Wolff (*Berl. Klin. Woch.*, 1908, No. 6).
2. DIE WISSENSCHAFTLICHE UND PRAKTISCHE BEDEUTUNG DER OPHTHALMISCHEN DIAGNOSE DER TUBERCULOSIS.—J. Citron (*Deutsch. Med. Woch.*, 1908, No. 3).
3. VERGLEICHENDE BEWERTHUNG DER TUBERCULIN REACTION IN KINDESALTER.—Fr. Beuschel (*Münch. Med. Woch.*, 1908, No. 7).
4. SALBENREACTION FÜR TUBERCULOSE.—E. Moro (*Münch. Med. Woch.*, 1908, No. 5).
5. DIE CUTANE UND CONJUNCTIVALE TUBERCULIN REACTION AN THIEREN.—H. Wildholz (*Berl. Kl. Woch.*, 1908, No. 11).
6. TUBERCULOSE STUDIEN. (*Virch. Archiv. Beiheft zum 190. Bande*).
7. Pirquet. (*Wien. Klin. Woch.*, 1907, No. 28 und 1907, No. 28. *Berl. Klin. Woch.*, 1907, No. 22).
8. Wolff-Eisner. (*Berl. Klin. Woch.*, 1907, No. 22).
9. Calmette. (*Academie des Sciences*, June 17, 1907).
10. Valée. (*Academie des Sciences*, June 17, 1907).
11. Lapersonne. (*Presse Médicale*, 1907, No. 99).
12. Calmette, Breton and Petit. (*Compt. rend. de la Soc. de Biologie*, October 12, 1907).
13. Lépine. (*Compt. rend. de la Soc. de Biologie*, July 27 and October 19, 1907).

Historically the date of birth of the ophthalmic reaction is coincident with that of the cutaneous reaction of Pirquet. At the meeting in Berlin on May 15th, 1906, Wolff-Eisner claimed that the value of Pirquet's method was restricted to young children, as experiments had shown that the cutaneous reaction was positive in a great number of individuals of normal health. In other words the cutaneous reaction is evidence only for the presence of a tuberculous focus somewhere and not for the activity of this focus,—the same as the subcutaneous tuberculin reaction. With our experience of the great frequency of such occult and encapsulated foci, never causing general infection, the positive result of Pirquet's test would, in clinically obscure cases, very often fail to elucidate the character of the pathologic condition existing when the presence of the focus had no relation to it. While in healthy children, between five and eight years of age, the percentage of positive reactions is very high (30 per cent.), it is almost the rule in all normal adults. Conclusions here without clinical indications are unjustified. Although Pirquet's method is of course positive in the majority of cases of active tuberculosis, it is liable to mislead in the diagnosis. The conjunctival reaction, as first studied by Wolff-Eisner, determined also the positiveness in the majority of healthy persons. This was due to the fact that in this work a 10 per cent. solution of tuberculin was used, a concentration too high and too massive. The effect on the inoculated persons was very serious and grave. Wolff-Eisner's work was taken up in France by Vallée with the

same serious effect on the subject. Calmette studied the question at the same time by using weaker solutions, and reported success in a great number of cases. His method was confirmed by Letulle, and Dufour in France and by Citron in Germany. Citron was the first to study the character of the reaction in its biologic aspect. He established the fact that it was positive alone in cases of active tuberculosis. On the other hand, reactions were obtained, also, although in a small percentage, of normal and sick individuals in none of which a clinical or other phenomenon suggested tuberculosis. A similar observation was made in many cases of typhoid where the subcutaneous injection of tuberculin proved to be positive. Whether this is evidence of an obscure and not accessible tuberculous focus, or based on other conditions, is not clear; with the impossibility, in the majority of these cases, to determine anatomically the presence or absence of tuberculosis, a large accumulation of suitable material must be observed to enable us to solve this point.

These observations, seemingly contradictory to the specificity of the reaction, do not interfere with the application of it, as the majority of cases of early tuberculosis, so-called incipient, and in the first stage, react typically. From the side of ophthalmologists are made serious objections against its use as causing, frequently, more or less discomfort, even, sometimes, purulent conjunctivitis and more serious and long-lasting disturbances. Sometimes, also, a general reaction obtains as in the old tuberculin injection. With proper care, however, and with a proper dilution, the subjective disturbance is slight and causes no discomfort. A great advantage is secured by the introduction of the conjunctival instillation of tuberculin, inasmuch as its range is much wider than the application of the subcutaneous tuberculin test. While in the latter, the slightest rise of temperature above normal is an absolute contraindication against it, this factor need not be considered in the ophthalmic test. In early cases, with no demonstrable bacilli, and without fever, a diagnosis can thus be made.

For injection, Calmette prepared a solution of the alcohol precipitate of the old tuberculin. This has been followed in England and in Germany. Lately, almost everywhere, a return to the old tuberculin has taken place. Citron considers it advisable to instillate one drop of a 2 per cent. solution into the conjunctiva of the inner canthus of one eye. If the reaction is positive, the other eye is instilled after some days with one drop of a 1 per cent. dilution. If no reaction occurs there, the diagnosis is nevertheless reliable (92 per cent.); in case the 2 per cent. solution proves negative, a 4 per cent. solution is used in the other eye. A negative effect excludes tuberculosis; a positive one is not reliable because this quantity will cause reaction in many healthy individuals. Great care must be taken to effect a full absorption of the tuberculin. The many clinical factors that mean a contraindication to the instillation, the presence of existing conjunctival or ocular disturbances or diseases, must be determined in every case as well as a predisposition to ocular catarrhs. The pathologic changes produced by the process vary greatly, from a mild congestion of the palpebral conjunctiva to involvement of the scleral conjunctiva, serous or even purulent exudate, to a definite conjunctivitis, and even more serious and long-lasting processes,—for instance pannus formation. The number of the latter, however, is small and in a collection of 100,000 cases, tabulated in Paris by Lapersonne only twelve are registered.

The experience so far obtained in the use of both reactions is, by this time, sufficient to permit of definite statements. There is no doubt that

both reactions must prove of immense influence on our scientific and practical dealing with tuberculosis. In the great majority of cases the establishment of a tuberculous process is possible by a method that subjects the patient to only very slight inconvenience, if any, and is as reliable, almost, as the subcutaneous injection of tuberculin. It may be said that a negative conjunctival or cutaneous test ought under circumstances subsequently be controlled by a subcutaneous injection. Moro has lately changed the method of cutaneous infiltration by a simple removal of the superficial epithelium with a razor. The raised area is rubbed with a mixture of equal parts of tuberculin and some oily material (lanolin) until a certain quantity is resorbed. The result is very conspicuous and the percentage of results is the same as with the abrasion method of Pirquet. This method is, in cured tuberculosis, to be preferred, as a negative result will prove the absence of any tuberculous tissue.

The theoretic interpretation of the process taking place, both in the cutaneous and conjunctival phenomena, has been made possible by the work of Wassermann in the essential nature of the subcutaneous tuberculin reaction. In the case of these late local reactions, phenomena take place that were observed by von Dungern, Roemer and Wassermann in other infections, the arising of localized areas of antibody formation—local immune areas. These areas are hypersensitive to the specific virus or toxin. Naturally they must, if brought in contact with a specific material, react quicker than an area not immune. In the latter, antibodies must be produced before reaction can occur; in the former the antibodies are present or are rapidly formed. That this is so, is shown by the observations by Cole on guinea pigs immunized against typhoid bacilli. The process of immunization with a larger number of bacilli requires weeks for the serum to reach the maximum of agglutinative capacity. If afterwards one waits until all of the agglutinins have gradually disappeared from the blood and then injects a dose of typhoid bacilli 10,000 times smaller than the first dose, the agglutinative capacity becomes rapidly, in a few days, higher than it was after the first inoculation. The biologic character of certain cells therefore must have been changed by the first injection in a way to make them quickly responsive to the specific agent.

The beginning of the conjunctival and cutaneous tuberculin reactions is quick after the application of tuberculin, in the conjunctiva, often in three or four hours, in the cutaneous six or seven hours. Delayed reactions are said to occur (three to four days) but they cannot be considered as conclusive because the long time shows that the affected tissues, by the effect of the material must have gradually adapted themselves to a specific reaction. All persons, immune against an infectious disease by passing through it, must give a quicker reaction to the introduction of specific substances than not immunes. For typhoid, as is well known, a reaction similar to the tuberculin reaction has been introduced by Calmette. Only few healthy persons, as said above, react like tuberculous individuals. In most of these the reaction is delayed. In the conjunctival and cutaneous tuberculin application, an immune area of tissue is produced that, later, reacts when tuberculin is introduced subcutaneously. Many reports are made stating that the conjunctiva of an instilled eye, or the site of a cutaneous infiltration, on the subcutaneous injection of tuberculin, later on will show the same reaction and sometimes much more pronounced than it was before. In a case of hip-joint disease (boy of 6 years) that received on general principles a tuberculin injection, and a Pirquet was made on January 22nd. A typical lesion was the result. On February 26th, the treatment began with 1-1000 mg. and

reached on March 27th, the amount of 1-10 mg. Five hours after the injection the site of the lesion, now scarcely perceptible, began to swell until the next morning a large area around it appeared greatly edematous and congested. Everything faded away until the following morning. There was no temperature except the regular rise (99.5) in the afternoon, and no other disturbance. The reaction was much more pronounced than the primary one, but passed away more quickly.

The literature on the subject is very extensive by this time. Its general expression allows us to hope that the new methods will lead us a long step forward in the recognition of early tuberculous processes, and therefore, to confine it more and more to a closed local disease and not to an open destructive process. It will help us to reach the goal so earnestly sought,—to deprive tuberculosis of its contagiousness, but to make it a trouble that with the methods now used mostly for the open and more or less hopeless stage will in the overwhelming majority of cases result in recovery.

THE RELATION OF DISEASES OF THE GASTRO-INTESTINAL TRACT TO DISEASES OF THE FEMALE GENITALIA.

A REVIEW OF RECENT LITERATURE.

By HUGO EHRENFEST, M. D.

1. BEZIEHUNGEN DER FLEXURA SIGMOIDEA ZUM WEIBLICHEN GENITALE.—Albrecht (*Arch. f. Gyn.*, Bd. 83, p. 216).
2. DOPPELSEITIGES METASTATISCHES OVARIALKARZINOM BEI PRIMÄREM KARZINOM DER FLEXURA SIGMOIDEA.—Brunner (*Zeitsch. f. Geb. u. Gyn.*, Bd. 61, p. 128).
3. DIE PHYSIOLOGISCHEN UND PATHOLOGISCHEN BEZIEHUNGEN DER WEIBLICHEN SEXUALORGANE ZUM TRACTUS INTESTINALIS.—Kehrer (*Berlin S. Karger*, 1905).
4. UEBER APPENDIZITIS BEI DER FRAU.—Klien (*Sammelbericht. Monatsch. f. Geb. u. Gyn. Dez.* 1906, p. 784).
5. UEBER DIE BEZIEHUNGEN ZWISCHEN FRAUENLEIDEN UND DARMLEIDEN.—Mueller (*Zentralbl. f. Gyn.*, No. 43, 1907, p. 1321).
6. MESOSIGMOIDITIS AND ITS RELATION TO GYNECOLOGICAL AFFECTIONS.—Ries (*Am. Jl. of Obst.*, May, 1907, p. 623).
7. GLEICHZEITIGES KARZINOM DES MAGENS, UTERUS UND OVARIEN, ETC.—Schenk und Sitzenfrey (*Zeitsch. f. Geb. u. Gyn.*, Bd. 60, p. 392).
8. Bland-Sutton. (*Brit. Med. Jour.*, May 26, 1908).
9. DIE ERGEBNISSE VON MAGENUNTERSUCHUNGEN BEI FRAUENLEIDEN.—Winkler (*Berl. klin. Woch.*, No. 33, 1905).

For obvious reasons the voluminous literature concerning appendicitis in women cannot be considered in this review. It is well known that appendicitis in the female offers many peculiar and important points in its relation to diseases of the genitalia. These points have been extensively discussed in the literature of the past few years, and we shall limit ourselves here to refer to the collective abstract of Klien (4) covering 45 of the more recent original contributions to this subject alone.

Only of late considerable interest has been shown in the relation of the sigmoid flexure to the female genitalia. Albrecht (1) rightly expresses his surprise that this interesting question has commanded so little atten-

tion heretofore, since size and position of this portion of the intestinal tract, anomalies in its development, the regular change of its position as the result of peristalsis and different degrees of filling, brings it into almost constant and ever changing contact with the uterus and its left appendages. There is a direct connection by way of the left infundibulo-pelvic ligament, which may permit the direct extension of pathologic processes from one to the other, both by way of the peritoneal surface and the subperitoneal connective tissue. The sigmoid flexure, like the bladder, must necessarily influence the position of the uterus, the left tube and ovary. In the opinion of many writers, in cases of obstinate constipation during the time of menstrual congestion the pressure of a filled sigmoid may give rise to typical dysmenorrhoeic pain which can be relieved by efficient catharsis. It has been claimed (Theilhaber, Gottschalk, etc.) that this pressure may cause chronic stasis in the uterus, finding its expression in profuse discharge, menorrhagia and other symptoms of endometritis. These are some of the direct mechanical effects of persistent filling of the sigmoid, but, as a rule, a chronic coprostasis in this portion of the intestine will lead to inflammatory processes in the intestinal wall—*sigmoiditis acuta and chronica*. Such an inflammation often will offer considerable difficulty in differential diagnosis from appendicitis and acute inflammation of the left uterine appendages, especially when occurring during the puerperium. In very chronic cases (hyperplastic sigmoiditis after Schuetz) the sigmoid flexure is palpable as a hard, movable, oblong and tender tumor. In these instances the diagnosis often is made difficult by the finding of an enlarged, tender ovary prolapsed into the posterior cul-de-sac, considered the cause of the patient's complaint, in fact only a condition developed secondarily by the sigmoiditis.

In older people a stenosing form of sigmoiditis is not uncommon, which may simulate carcinoma, often causing the formation of diverticula and in them of ulcerations. Such ulcers at times perforate and produce an obscure peritonitis, or, without perforation, lead to the formation of troublesome peritoneal adhesions. Such adhesions may fix, e. g., a pyosalpinx to the sigmoid; thus they are of practical importance in gynecologic operations. Gersuny has described such typical adhesions which impair the normal mobility of the sigmoid flexure and often suggest inflammatory processes of the genitalia as their primary cause. Albrecht emphasizes that the gynecologist must be familiar with the pathology and diagnosis of sigmoiditis and must be able to use the sigmoidoscope as well as the cystoscope.

Albrecht also speaks of mesosigmoiditis whose relations to gynecologic affections have been so clearly demonstrated by Ries (6).

Ries defines mesosigmoiditis as a condition of chronic inflammation of the connective tissue as well as the peritoneal covering of the mesentery of the sigmoid flexure. A secondary shrinking of the mesentery prevents the free excursions of this normally very movable portion of the intestinal tract, and then becomes a fertile source of great and sudden danger. One of the two main causes of this condition is a chronic inflammatory process extending from adjoining structures, particularly the rectum and the female sexual organs. This form of extension has been fully described by Virchow, and Freund has stated the fact that a *parametritis chronica atrophicans* is frequently associated with a mesosigmoiditis. Chronic inflammations and tumors of the left uterine appendages often lead to adhesions to the mesosigmoid. The symptoms of mesosigmoiditis are not very marked. At times the pain is sharp, but usually the patients drag along with a diagnosis of intestinal fer-

mentation or the like; they may get well and after some time the symptoms may reappear. In rarer instances the process of shrinking progresses, a typical ileus, due to volvulus of the sigmoid, develops, and during operation finally the correct diagnosis is made.

Similar views are expressed by Mueller (5). As the result of mechanical and chemical irritation in cases of obstinate constipation ulcerative processes may develop which finally lead to periproctitis, perirectal exudates or abscesses. These processes can give rise to perimetritis and parametritis and result in various forms of malposition of the uterus. Mueller objects to the often repeated statement that 90 per cent. of all gynecologic diseases are directly or indirectly due to gonorrhea. He is inclined to believe that one would be more justified in claiming this as the percentage of the cases in which gynecologic diseases originate from the intestinal tract, including, of course, all the secondary affection of the genitalia following or coincident with appendicitis.

The most complete consideration of all physiologic and pathologic relations of the female genitalia to the intestinal tract is found in a book of Kehrer (3) which is entirely devoted to this problem.

Among the various original investigations made by this author those may be mentioned here which relate to the influence of menstruation and pregnancy upon the secretion of the various constituents of the gastric juice, and upon the peristalsis of the stomach. Kehrer concludes that the subjective symptoms of gastric disturbances during pregnancy are due partly to a neurosis affecting the sensibility, motility and the secretory function of the stomach. The dyspeptic symptoms often are caused by a diminished production of HCl. This same form of gastric neurosis at times is found associated with gynecologic disturbances appearing independently from pregnancy. Long continued uterine hemorrhages, malpositions and inflammatory processes, as a rule, lead to deficient acid secretion, and in cases of uterine cancer may develop into a complete achlorhydria.

Winkler (9) also investigated the secretory and motoric function of the stomach in 41 women who were treated for various gynecologic troubles. He found a normal chlorhydria in 11, hypochlorhydria in 20, achlorhydria in 5, but a hyperchlorhydria only in one patient. In 17 cases the total acidity was normal, in 2 above normal. In 30 per cent. of the cases the secretory function of the stomach was normal. In 18 of 31 patients a gastroparesis with motoric insufficiency existed. Winkler concludes that in all serious disturbances of the genital tract the secretory function of the stomach almost always shows some anomaly, as a rule, in form of hypochlorhydria. He established the interesting fact that the treatment of the gynecologic disease usually leaves the gastric disturbance uninfluenced, the latter calling for special medicinal and dietetic treatment.

In a critical review of the gynecologic literature of the year 1906 (INTERSTATE MEDICAL JOURNAL, February, 1907, p. 206) I had occasion to mention a number of articles dealing with the interesting and eminently important question of bilateral malignant growths of the ovaries as metastases of primary cancers situated in stomach, uterus, breast, skin, intestines, gallbladder and suprarenal glands. These organs are here enumerated in an order which according to Amann expresses the relative frequency with which the primary growth is found in them. A careful examination of all abdominal organs should precede every operation for ovarian carcinoma. Bland-Sutton (8) believes that the majority of bilateral solid ovarian tumors are carcinomatous, and, as a rule, are metastatic. Of women who died of gastric cancer in at least 10 per

cent. of the cases metastases are found in the ovaries. More recent contributions to this subject are reviewed in a paper of Brunner (2) in which he describes metastatic growths developed in both ovaries from a primary carcinoma of the sigmoid flexure. In a very thorough and interesting manner this question is also considered in a contribution of Schenk and Sitzenfrey (7), who conclude that in their belief the final results of the operative treatment of gastric and intestinal carcinoma, at least in women, could be improved by a systematic removal of both ovaries, even if they are found apparently normal on inspection.

TENDON, NERVE AND MUSCLE TRANSPLANTATION.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

The French Surgical Congress. Paris, Oct. 7th-12th, 1907. Section on Orthopedic Surgery. Reported by M. Péraire (*Revue D'Orthopédie*, March, 1908).

M. Gaudier (Lille). The proceedings of a surgical nature designed for the relief of flaccid and spastic paralysis, as a rule, fall under two heads; the transplantation of tendon to tendon, total or partial, or periosteal transplantation. The transplantation and suture of tendon to tendon should always involve the use of a normal tendon, either as a whole or in part, being inserted into a paralyzed tendon. The tendons that are used for transplantation should be selected after minute examination and study of the movements and the appearance of the limbs. It is very important that the two tendons should run in parallel directions for some distance. Deformity should be hyper-corrected and there should be enough tension put on the paralyzed tendon to hold the deformity corrected. Certain authors have a preference for muscular transplantations, using not only the tendons but portions of muscles. Such is the method of Drobnik, of Péraire, and of Mally. As to the suture material, the majority of surgeons use silk, others use cat-gut, silver, aluminum or bronze wire. Periosteal transplantation requires the insertion of the normal tendon and its suture directly into the periosteum, at times requiring the placing of intermediary continuation of a normal tendon with an artificial tendon of silk. This insertion should be very solid. Lange has shown on the cadavers of children that this insertion will stand a weight of 14 to 15 kilograms where 2 to 3 kilograms will rupture a suture of tendon to tendon. The majority of surgeons employ immediately after operation a retentive appliance; usually a plaster of Paris bandage which is to be replaced finally by an orthopedic appliance. Nothing is more variable than the period of time necessary to employ apparatus as an after treatment. The condition of the muscles alone and their power of movement and the stability of the part make it possible to determine this point, at the same time electricity, massage, gymnastics and hot baths should be employed always with the greatest prudence. We have in either muscle or tendon transplantation a therapeutic agent of real value, but to the author's mind that which is of real service, is the application of method and discernment in the treatment. The results of Volpius are for the most part of very high character in the mild forms, but it is better to do arthrodesis than to have the patient constantly wearing an apparatus. The transplantation of nerves, as applied to the treatment of paralysis of the limb, depends upon the considera-

tion of fifteen observations that have been published up to the present time to determine its value. Twelve of these cases were on the lower limb; eight of which resulted satisfactorily in that the deformity disappeared and there was return of muscular power. In the four others the result was of slight improvement or none. For the upper limb, two results were good and one was unsatisfactory. It is perhaps well in certain cases to employ nerve transplantation, but it should be remembered that such an operation may produce a lesion in a sound nerve, also that the paralyzed nerve should not be completely sectioned because one never knows if the nervous continuity may not be re-established; in fact that this may not have played an important part in some of the good results observed after these operations.

Kirmisson (Paris) stated that the determination of the usefulness of tendon transplantations in the treatment of paralysis is always most interesting. Statistics are often published that do not give the end result and he believes that often an immediate good result is transformed finally to a complete failure. What makes it difficult to estimate the results of tendon transplantations is that a large number of cases have been subjected at the same time as the transplantations to tenotomy, forcible correction and fixation of tendons. Infact, simple tendon transplantation in the treatment of infantile paralysis has been replaced by tenoplasty, a word which covers a great number of proceedings, making it impossible to classify and estimate the exact value of the results obtained of any given procedure. He has performed arthrodesis on 40 cases and has obtained good results. He prefers this operation where the paralysis is at all extensive, as it gives good results which have the advantage of being certain. Regarding spastic paralyses, the indications for tendon transplantations are very limited; good results have been obtained in infantile hemiplegia. In Little's disease, tendon transplantation does not seem to be indicated. Regarding nerve transplantation for the relief of paralysis, he states that the results have been too few and too recent to justify judgment of its merit. It is possible that this procedure will finally supplant tendon and muscle transplantation.

Hoffa (Berlin) stated that the aims of tendon transplantation are to produce in the paralyzed limbs its normal contour and its normal function. It is unsuccessful as an operation if these two objects are not met. Complete failure is exceptional however, and depends upon four principal factors: 1. Incomplete preliminary treatment; 2, inadequate plan of operation; 3, faulty operative technique; and finally, 4, insufficient after-treatment. The first thing to obtain is a correction of deformity or contracture before operation; the second consists in discovering the exact state of the muscles; that is, which are functioning and which are paralyzed; the third is to have an aseptic technique and to use silk that has been boiled ten minutes in 1-1000 bichloride solution. He believes in drainage for the first two or three days, closure of the skin with silk sutures and in performing the operation under the use of the Esmarch bandage. The muscle which is transplanted should be placed on a proper degree of tension, the limbs should be placed in hypercorrection. The two methods of transplanting tendon to tendon or tendon to periosteum are exactly similar, except that periosteal suture of tendons is preferable. He has employed artificial silk tendons only rarely. Post-operative treatment is of the highest importance. It is necessary to keep the limbs hypercorrected from six to eight weeks and to wear an apparatus for six months. This apparatus should keep the limb immovable, but massage, electricity and exercises should be employed. If all the muscles are paralyzed one must have recourse to arthrodesis. In spastic

paralyses, tenotomy of the antagonists, which are in a state of spasm, or a transplantation by a graft of the superfluous energy of the antagonists is the proceeding to be employed. Tendon grafting in Little's disease does not appear to him to have any advantage over simple elongation of tendons following tenotomy and correction of the members by an apparatus.

Mr. Robert Jones (Liverpool) stated that he has performed 253 transplantations of muscles and tendons, the complete statistics of which it is impossible to give. To his mind transplantations have for their objects the following: To strengthen a weaker group of muscles, to supply muscular force to a paralyzed muscle or muscle group, to diminish the over-action of a group of muscles in spastic paralysis, to transplant the action of a tendon that is exercising a vicious force or producing a deformity;—such as is the case in congenital club foot where a transplantation of the tendo-Achillis to the external side of the os calcis tends to correct the deformity. Finally these procedures may be aided by the use of arthrodesis. He has performed 51 cases of tendon transplantation, 167 periosteal sutures, 17 cases of osseous suture after tunnelization, 11 cases of muscular suture, and 7 cases of transplantation of tendo-Achillis. The best results have been obtained where tendons have been sutured into the bone or periosteum. He gives as the reasons for failure the following: Insufficient tension, insufficient correction of deformity, insufficient liberation of the transplanted tendon so that adhesions form, too much tension or complete want of tension on the tendon transplanted. He believes cases should not be operated upon until after the fifth year. By manipulation, by apparatus and tenotomies, he corrects the deformity and maintains the limb for a certain time in hypercorrection. He believes that careful observation and a careful technique will give 75 per cent. success in these cases. As to spastic paralysis he has done 10 transplantations; 4 times the flexors of the wrist into the extensors; 6 times the biceps or biceps and semimembranosus into the patella. The 4 cases of transplantations at the wrist represent 8 arms in which he had 3 completely successful. The 6 other patients represent 12 legs in which he had 6 successes and 4 improvements. In spastic paralysis he recommends excision of portions of the abductors and flexors of the leg and elongation of the tendo-Achillis. The limb should then be kept two or three months in extreme abduction. The transplantation of the biceps to the quadriceps has given him 3 good results, 3 partial successes and 3 complete failures. He has transplanted a portion of the tendo-Achillis in 15 cases of congenital club foot to the external side of the os calcis. Transplantation should not be done until 2 years after the establishment of paralysis. Failure results from lack of correction of deformity before transplantations, in using tendons that pull in the right direction, failure to properly suture the transplanted tendon, and lack of hypercorrection for sufficient period after operation. The limb should be protected after transplantation from complete weight of the body.

Lange (Munich) stated that success in tendon transplantation depends upon: 1, the adoption of a simple plan of operation and a total transplantation; 2, a rigorous aseptic operative technique. Silk used for suture should be boiled in a solution of 1-1000 corrosive sublimate and should be coated with paraffine. For 10 years he has employed nothing but periosteal transplantations. Post-operative treatment should be very carefully observed by the surgeon. In order to obtain abduction of the lower extremity he advises detachment of the great trochanter above the vastus externus, this is sutured with 8 or 10 strands of coarse silk to the iliac crest. The lack of success in tendon transplantation in the lower ex-

tremity, he attributes to adhesions. A transplantation will adhere very strongly to bone, ligaments, fascia or other tendons. In order to prevent these adhesions it is necessary to preserve and transplant as much as possible of the connective tissue and the adipose tissue that surrounds the transplanted tendon. If adhesions persist it is necessary to perform a secondary operation.

Volpius (Heidelberg) stated that he did not wish to attack arthrodesis as an operation. There are cases where it is necessary but it does not compare to tendon transplantation where the indications are the same. Lack of success following tendon transplantation results from not choosing the proper cases or from not choosing a proper operation. To his mind early operation is a crime. Intervention should not be made until a year after the establishment of paralysis. It is necessary to make careful plans as to the operation and these plans should be based upon an exact examination of the condition. He recommends electrical examination and observations of the active movements of the patient. As to technique he prefers transplantation entire to transplantation partial. He does not believe the method of Lange, consisting of periosteal fixation of the quadriceps to be useful. Artificial tendons are only rarely necessary and the paralyzed tendon offers enough solidity for suture. The results of tendon transplantations are not always durable, but this does not seem to be a reason for rejecting them as treatment. The causes of failure, depend upon the choice of the case, the plan of operation, the technique employed and the conduct of the post-operative treatment. This is made difficult, due to the fact that the patients are usually of the indigent class.

CORRESPONDENCE.

LONDON LETTER.

(FROM OUR OWN CORRESPONDENT.)

The clinical study of lunacy is not—to put it mildly—very satisfactorily arranged for in London, in spite of a goodly supply of institutions devoted to the care and treatment of cases of mental disease. Dr. Maudsley, F. R. S., whose name in psychiatry is far too well-established and universally known to need any further introduction, has just made a most munificent offer of 30,000 pounds to the London County Council “towards the cost of the establishment in London of a fitly-equipped hospital for mental diseases.” The gift has been accepted by the Council and there is now every prospect of seeing the realization of what has been hoped for and urgently wanted for many years. What is suggested is a hospital of 100 beds, carried on in the same way as the ordinary general hospital, with a visiting staff composed of men of eminence in this particular department, a resident staff, and a school for clinical teaching with laboratories for research. Much good and important work has been carried out in the Council’s own Asylums, notably by Dr. F. W. Mott, but these institutions being rate-supported are not available for clinical teaching. Each medical school in London has its lecturer on mental diseases, all of whom are physicians of high repute, but the opportunity for individual treatment and close personal attention afforded by clinical study has only been possible to the few who could take up resident appointments the number of which is limited. Dr. Maudsley’s munificence and the great public spirit displayed therein will be of enormous benefit to knowledge, and, therefore, through the profession to the patients themselves. It in no whit detracts from Dr. Maudsley’s meed of praise to say that others of his own profession would readily emulate his example, other things being equal. There is much in the rough and tumble of practice that is distasteful, but no other profession or calling can claim such an ever-present and all-pervading sense of public-spiritedness, and one so insistent as to be accepted as a positive duty.

The Hospital Conference of 1908 met at the beginning of the month and discussed many things in connection with hospitals, large and small, without arriving at any very material results. This, perhaps, is not altogether unexpected, for although it boasts the sonorous title of the United Kingdom Hospitals Conference, it by no means represents the actual and responsible managers of the hospitals throughout the country. The burning question connected with hospitals in this country is the out-patient department. This applies more particularly, indeed almost exclusively, to hospitals in the large centres of population. The numbers treated as out-patients are an ever increasing quantity forming an evil which cuts many ways. On the one hand, the strain involved upon out-patient physicians and surgeons and upon the resident staffs of the hospital is far too great. In a great hospital the work, beginning at noon, lasts until quite late in the afternoon, leaving the presiding genius absolutely exhausted. Opportunities for teaching have to be scamped in order to cope with the crowd waiting to be seen and treated. Then, on the other hand, the general practitioners in the neighbourhood and beyond, have a legitimate grievance in that out-patient relief is fre-

quently granted to those whose position by no means entitles them to gratuitous advice and treatment. The system is in fact used as a weapon against them by those of the baser sort—of whom, alas! there are many. The practitioner values the privilege of sending up difficult cases for an opinion when the patient is unable to afford a consultant's fee, but he resents, very naturally, cases of ordinary ailments, which by right should fall to his share, receiving advice and treatment for nothing. The hospital and himself are both defrauded. To the former it is a flea-bite, but it is far more to the latter. Recent legislation anent the medical inspection of children in the elementary schools is now beginning to come with force and will most acutely aggravate the matter. The eye-hospitals have already refused to deal with the torrent of refraction work which threatens to engulf them.

The Royal College of Surgeons of England will soon be voting on the question of the admission of women to the College as members and Fellows. Two questions are asked, one as to the desirability of women being admitted as members by examination, and the other as to Fellows. The members have been asked to reply with a simple "Yes" or "No," but an attempt is being made to induce members to give a more amplified answer. The R. C. S. Eng. is one of the few fortresses still unstormed by the militant sisterhood. It would be just as well to accept the inevitable at once without more ado. There is no longer any great rush of women to take up medicine as a profession. The supply is suited to the demand, which is not great.

The University of London will be probably made the subject of an extensive inquiry before long. Speaking at University College, Lord Rosebery, who is the Chancellor of the University, intimated that he did not consider that the present constitution of the University was such as to enable it to undertake all the new duties continually imposed upon it. He raised the question as to whether the machinery was equal to the great strain or whether it had not already become superannuated. When the head of the University thus publicly raises the question, the matter is not likely to remain unnoticed. It will be a great day for London when her University is a real living factor and it is most sincerely to be hoped that the present Chancellor, having set his hand to the plough, will not leave the work unfinished. He has done good work for London before. As he is now detached from political life we may cherish a lively sense of favours to come.

May 5th.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

The end of the nineteenth century saw a great change in the doctrines and theories of medical science, and this evolution has been emphasized very strongly during the last few years.

It would undoubtedly be an act of great injustice to underrate the importance of the labors of our predecessors, and it is quite true that their efforts are partly responsible for recent discoveries, but it is also very certain that the actual status of medicine today is noticeably different from that, for instance, of twenty-five years ago.

By virtue of the labors of Laennec and Cornil in France, of Virchow in Germany, pathologic anatomy had taken a place in the foremost ranks of medical science and it was thought to be the great beacon by the light of which the physician could, with the utmost clearness, conduct his researches and accomplish his cures. And the importance which was

accorded to the purely anatomic character of lesions, was shown by the fact that all medical treatises adopted pathologic anatomy as a basis for the classification of disease. Is there anything which shows up this line of thought more plainly than the division of liver diseases into atrophic and hypertrophic cirrhoses?

We know now that, notwithstanding the benefit which this systematic classification has rendered our clinical knowledge of liver complaints, it cannot be applied to all cases. We have to acknowledge, almost every day, that the symptoms of hypertrophic and atrophic cirrhoses are not always so sharply opposed to each other. In some cases the first condition may be accompanied by ascites and the second by jaundice, and admitting that the existence of mixed cirrhoses is, as Dr. Marcel Labbé has so judiciously observed, equivalent to an overthrowing of the anatomo-pathologic method of classification.

The history of nephritis has passed through the same vicissitudes, and the example furnished by hepatic cirrhosis is typical enough to make further comment unnecessary. Pathologic anatomy, notwithstanding its many lessons, has not been the means of explaining all the clinical manifestations of diseases, since the autopsies invariably show lesions in an advanced stage, while it is certain that the diseases which accompanied these lesions existed, clinically, at a time when the lesions themselves were not yet manifest enough to be appreciated. What we have said of pathologic anatomy can also be applied to bacteriology, which has given to a certain number of diseases an individuality of their own, but which cannot serve as the sole basis for a complete remodeling of the science of medicine.

To-day medical science turns to physiology to interpret, clinically, phenomena, thereby fulfilling the prophecy of Claude Bernard. Instead of looking for an anatomic lesion in the background of a clinical symptom, we now seek to discover what interference with a physiologic function has taken place, or the causes of its complete cessation. To be more exact, we endeavor to make the clinical syndrome entirely dependent on the alteration or suppression of a physiologic function. For this reason we find that uremia, instead of being classified according to its anatomic seat (respiratory, digestive, nervous uremia), is being defined according to its physiologic characteristics.

In accordance with the results obtained by MM. Widal and Achard, we speak of dropsical uremia with its edema and serous effusions, in contradistinction to dry uremia which is characterized by syncope and coma. In the first, we have a retention of chlorides, in the second, of urea. Singly, or together, these two groups of symptoms may be observed in the two kinds of nephritis—interstitial and epithelial. Consequently the object of the therapist is no longer that of attempting to correct an anatomic lesion,—the futility of which must be apparent to all,—but to prevent the retention of chlorides or of urea, as the case may be.

The study of the morbid manifestations determines the therapeutic measures to be used, and the duty of the physician is to find out what disturbance of a physiologic function causes the group of symptoms observed by him. This is the only way in which treatment can be followed rationally and with good results.

These examples, taken at random, undoubtedly show the present tendency of pathology. Here, unmistakably, we find a phase of continuous evolution. In conclusion let me remark that the conception of clinical conditions based upon physiology, gives to the treatment of disease a more substantial basis than did the theory of specific lesions.

May 10th.

LETTERS TO THE EDITOR.

EDITOR, INTERSTATE MEDICAL JOURNAL.

DEAR SIR:—In the May number of your journal you published a letter from Dr. C. A. Todd on "Eddyism" in which he makes a statement to which I take exception. He states that "the extensive spread of this epidemic [Eddyism] is explicable by reason of the cult being based on homeopathy." Dr. Todd's or any other person's statement to that effect has no weight except they can prove it. Anything based on homeopathy must be based on its law *Similia Similibus Curantur*. Now, pray, where in Eddyism do you find anything complying to this law?

From his derision of infinitesimal dosage I judge he arrives at the above conclusion. Yet a physician may prescribe large doses of medicine and still prescribe homeopathically, just so the prescription is based on the above law. Experience teaches him that the small dose acts better than the large, hence the small dose.

Dr. Todd's bringing homeopathy into the subject is certainly not in keeping with the times. First, because the more advanced men of your school grant us, at least, passive recognition. Secondly, he defeats the very object he desires to accomplish by making the homeopaths join with the Eddyites for common defense.

Now this last is very far from our wish. If Dr. Todd had ever read any of our society transactions, he would learn that we assail Eddyism as violently as do the other branches of legitimate medicine. We would gladly join Dr. Todd in his crusade if he did not put us on the defensive. Have him answer my question in the first paragraph and if he were misinformed about it, let him retract that statement.

Any attack at this time against homeopathy were ill advised in view of the fact of Sir A. E. Wright's recent discoveries on homeopathic lines.

Yours, etc.,

H. A. UHLEMAYER, M. D.

St. Louis, May 15th, 1908.

EDITOR, INTERSTATE MEDICAL JOURNAL.

DEAR SIR:—It would seem that my letter on "Eddyism," appearing in the May issue of your Journal, has been misinterpreted by some as an attack on Homeopathy because, among other reasons for the calamitous spread of that sect, I gave Mrs. Eddy's own statement that she based it on that part of Hahnemann's teachings known as the theory of infinitesimals. In her "bible" (Science and Health) she argues that if cures are effected by the administration of remedies so attenuated as to leave nothing behind of the original drug (Hahnemann's high attenuation—rising above matter into the spiritual, dynamic), then, as a necessary corollary, disease can have no real existence whatever—disease must be altogether a mental delusion, hence "Christian Science."

Now, whether Mrs. Eddy's argument is sound or not, whether she interprets suitably the scheme of Homeopathy or not, is none of my affair. Let my objectors argue with her. I am far from being desirous of figuring as her champion, quite the contrary. The following are specimens of Mrs. Eddy's logic: "Years of practical proof through homeopathy revealed to her (Mrs. Eddy) the fact that mind instead of matter is the principle of pathology" (Eddy. Miscellaneous works, p. 35). Mrs. Eddy at one time was a homeopathic practitioner. Further: "The highest attenuation of homeopathy and the most potent, rises above matter into mind, and thus it should be seen that the Divine Mind is the healer and that there is no efficacy in the drug. This discovery leads to more light. You say a boil is painful; but that is impossible, for matter

without mind is not painful. The boil simply manifests your belief in pain through inflammation and swelling; and you call this belief a boil" (Eddy. Science and Health, p. 153). "Metaphysics, as taught in Christian Science is the next step beyond homeopathy" (ibid. p. 156). I give these quotations in reply to letters received, asking for my reasons in stating that "Eddyism" is based on Homeopathy. I have no reasons in the matter at all. In my condensed sketch of Eddyism, I gave Mrs. Eddy's reasons; they are in no way mine and do not further concern me. But it does greatly concern me and must every medical practitioner that there flourishes here in our midst a monstrous sect that defies all sanitary law and cruelly sacrifices human life in obedience to the insensate commands of a Mrs. Eddy.

Yours, etc.,

CHARLES A. TODD, M. D.

St. Louis, May 18th, 1908.

EDITOR, INTERSTATE MEDICAL JOURNAL.

DEAR SIR:—The following letter was received by me from Dr. M. L. Heidingsfeld, 19 West Seventh street, Cincinnati, Ohio:

"MY DEAR DR. HOUWINK:—A recent article of yours in the INTERSTATE MEDICAL JOURNAL conveys the impression to me that you are the first to make successful moulages or wax-models in this country. I respectfully beg to call to your attention that Schamberg has written a monograph on this subject a number of years ago and that specimens have been collected and exhibitions made at various medical meetings by Schamberg, Wallis, Gottheil and myself for the past several years. To do justice to Schamberg and those who have emulated his painstaking efforts, I desire to make this correction.

Very respectfully,

M. L. HEIDINGSFELD."

I wrote Dr. Heidingsfeld, that I did not intend to convey the impression mentioned in his letter and requested him to carefully re-read my article, after which I expected him to agree with me that he was mistaken. However, looking again over my article, which is an abstract of a paper read by me before the St. Louis Medical Society, October, 1907, I find a sentence which might have conveyed an impression other than was intended. This sentence reads: "A few dermatologists in Eastern cities have some specimens bought in Europe, but a regular museum in this line is not found on this side of the Atlantic." Nowhere in the article did I claim to be the first who made moulages "successfully" in this country. In fact, no statement was made by me about my own work as being so. The purpose of my paper and article was simply to make my fellow physicians in St. Louis acquainted with moulages and to secure their coöperation in making a collection for St. Louis. It was therefore not necessary, in my opinion, to review the work done by others in this country. However, since Dr. Heidingsfeld received a wrong impression of my intention, I take great pleasure in begging the readers of this Journal, who read my article, to modify the sentence mentioned above, so as to read as follows: "A few dermatologists in Eastern cities have some specimens, bought in Europe—or made by themselves, as for instance Dr. M. L. Heidingsfeld of Cincinnati, Ohio,—but a regular museum in this line is not found on this side of the Atlantic."

You will oblige me greatly by having this letter printed in the next issue of the INTERSTATE MEDICAL JOURNAL.

Yours, etc.,

St. Louis, May 10th, 1908.

J. J. HOUWINK.

OBITER DICTA FROM FOREIGN JOURNALS.

THE PYTHAGOREAN IDEA OF DIET.

The Lyons (France) *Medical Journal*, in a recent number, gives many interesting details as to the dietary laws of Pythagoras, the famous Greek philosopher and mathematician, who was born in Samos, Greece, probably about 582 B. C. The details are taken from the works of Antonio Cocchi, a celebrated physician of Florence who lived between 1700 and 1750. The Pythagorean regimen consists of the habitual use of all fresh and young vegetables, in preparations which are bland or very weak; also roots, flowers, leaves, fruits and seeds. The use of all animal food, whether fresh or dried, is interdicted because of the volatility resulting from ingesting either meat or fish. While milk and honey enter into the diet, eggs are tabooed; and as regards drink, pure water unmixed with wine or any vinous liquid is allowed. On rare occasions it is permitted to lessen the rigors of the regimen by the addition of a small quantity of animal nourishment, provided the meat is tender and fresh, the preference being given to muscles rather than to the viscera.

In advocating his theories, Pythagoras had in view the health of the body and the mind; what he taught about the transmigration of the soul was merely a pretext to prevent people from eating animal food. The people, careless as to the real import of the true and natural laws as understood by Pythagoras, seemed to be open only to specious reasoning; therefore the philosopher thought it best to promulgate the idea, that only complete abstinence from the flesh of animals could prevent the strange punishments inflicted on those souls that were unfortunate enough to be transmigrated into the bodies of animals, as the result of a meat diet.

In reality, Pythagoras ate and advised others to eat, from time to time, fowl, suckling pig, veal and fish. He had not, as is generally believed, an abhorrence of the much-derided bean, a fact which should be of interest to all those students who have attached great importance to the legends anent the Pythagorean bean. Even so wise and genial a philosopher as Thoreau has been guilty of too great a belief in the Greek philosopher's vast prejudice, for in "Walden" he writes as follows: "Not that I wanted beans to eat, for I am by nature a Pythagorean, so far as beans are concerned." As is known to close students of Egyptian history, abstinence from beans was rigorously observed in Egypt; later the idea spread to Greece and Rome, and if Pythagoras advocated a similar ostracism, he was merely following in the footsteps of others, and was not, as has been wrongly supposed, the initiator of a crusade against a comparatively inoffensive vegetable.

THE TÜRCK-CZERMAK CELEBRATION IN VIENNA.

Gustav Killian, in the *Deutsche Medicinische Wochenschrift* of April 23d, pays tribute to the masters of medicine, Ludwig Türck and Johann Nepomuk Czermak, in an article that indelibly impresses itself on the

reader's mind. The following excerpt, though rather brief, will indicate the scholarly qualities of the writer: In the spring of the year 1858 the medical world was apprised of the discovery of the laryngoscope. Seldom, indeed, has a discovery, which at first was thought to be of only secondary importance, been attended with such far-reaching results. To-day, after the lapse of 50 years, we regard with pride the magnificent structure that has resulted from what one might call, a small corner stone in medical architecture. Out of this discovery a new, interesting and many-sided science arose, a science which brought immense relief to suffering humanity.

Since the beginning of the art of medicine, there have been discoveries in connection with laryngology. But the first half of the 19th century was really the period when great progress was made for then Bozini wrote his work on a new method of illumination, and a number of men, such as Senn, Babington, Bennati, Baumes, Liston, Avery and others, attempted to examine the larynx by means of a mirror. The anatomist, Henle, the physiologist, Johannes Müller, and above all the pathologists, Cruveillier and Rokitansky, paid especial attention to the larynx. At the same time the clinicians, Albers, Ryland, Trousseaux, Belloc, Rühle, Friedreich, devoted considerable study to the diagnosis and therapy of laryngological diseases. Thus it happened that at the end of the first half of the 19th century, diseases of the larynx were reckoned with the most important diseases in the whole range of pathology.

Despite the progress noted above, how unimportant it all appears when compared with what has been accomplished in very recent times! What problems remained unsolved in those days! How limited was the knowledge of therapeutics! The times were ripe for a change and its possibilities were apprehended by many. Suffering mankind grew more and more insistent. The coming of the solution of the problems of laryngoscopy was, so to speak, in the air.

In 1854 Manuel Garcia—recently deceased at the age of 100 years—succeeded in examining his own larynx by means of a mirror. But to Ludwig Türck belongs the honor of being the first one to accomplish what surely must be reckoned a feat, for in Vienna in 1857 he not only examined but demonstrated the interior of the larynx of a patient by using a laryngoscope. At last the science of medicine reached a long-desired mile-stone in its progress! At this time Ludwig Türck was 48 years old. He had accomplished much as a neurologist. But from now on a new province of medicine was to be the seat of his activities. However, fate ordained that some time before his studies were completed and the results of his investigations were made public, a formidable rival would arise in the person of Johann Nepomuk Czermak, the then physiologist at Budapesth. An emulation of a high order between the two men took place, which called into play the best expression of their mental forces. Czermak utilized his experiences derived from his knowledge of optics, employed artificial light instead of sunlight, dedicated his labors principally to the technique and merely used his clinical studies as a means of illustration. Türck's ambition, on the other hand, was purely clinical, his one desire being the relief he could bring

to the afflicted with the help of his ever-increasing knowledge of laryngological diseases and the newest methods.

With the laryngoscope Czermak taught the medical world how to examine the trachea from above and through the wound resulting from tracheotomy; the interior of the pharynx and the posterior nares. Coeval with these advances in the laryngological field, Türck was unremitting in his endeavors to effect a new idea of the diseases of the larynx and trachea as the result of laryngoscopy. In 1866 he published his never-to-be-forgotten classical contribution and thus completed his life's work. Soon after (1868) death set in after a brief illness. And strange to say, about this time, Czermak ceased to be a force in the province of laryngology.

But the seeds had been sown and throughout the world a full fruition resulted. Authorities such as Störk, Semeleder, Gerhardt, Lewin, Rauchfuss, Voltolini, Viktor v. Bruns, Waldenburg, Traube, Tobold, Mackenzie, Elsberg, Mandl, Moura-Bourillou, Fauvel, Oertel, Gottstein, Wilhelm Meyer, Navratil, Löri, Krishaber, v. Ziemssen, Schnitzler, Leopold v. Schrötter, and later Rossbach, Riegel, Bäumlér, Solis Cohen, Massei, Bschorner, Hopmann, Schech, Sommerbrodt, Burow, besides others, devoted themselves scientifically and practically to a furtherance of the new and revolutionary interpretation of nose and throat diseases. Nearly all these men were young when they took up their specialty, and those who were slightly handicapped by middle-age, were fortunate in having the enthusiasm of youth. And it is well here to dwell on the advantages of youth and the quality which generally accompanies that desirable age—enthusiasm—for without both, there can be but a poor adaptability to those latest phases of any scientific subject, which breathe the spirit of revolt against antiquated teachings and a poor and clumsy technique.

HISTORICAL NOTES.

THE OATH OF HIPPOCRATES.

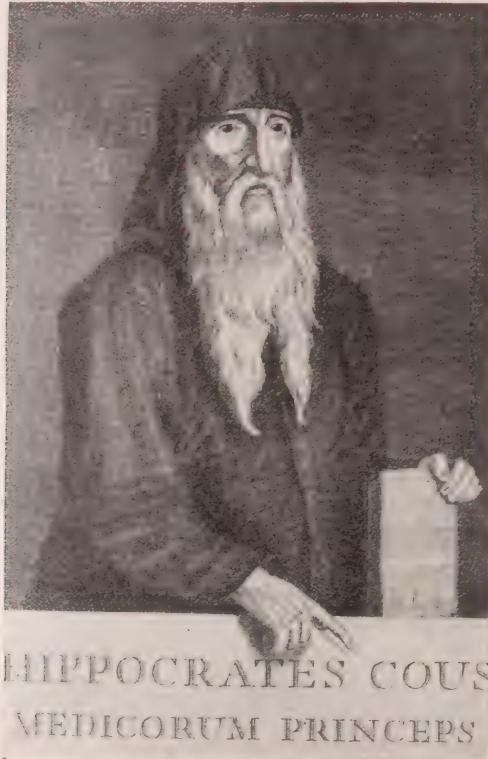
Although every physician has read the Oath of Hippocrates it is of so great an historical and archæological value that we are sure our readers will be interested in a translation of a Latin version made by John Young, Keeper of the Hunterian Museum, Glasgow.

"I swear by Apollo, the physician, and Aesculapius and Hygeia and Panacea, and I call to witness all the gods and goddesses, that I will, to the best of my power and judgment, keep this oath and this written declaration in its integrity. I shall hold him, who has taught me this art, as a parent. I shall devote my life to him, and shall supply him with all of which he has need. I shall regard his sons as my brothers, and, if they wish to be taught, shall teach them this art without fee or indenture. I shall make sharers in the teaching by precepts, and listeners to the oral instruction, and participators of the other modes of instruction, both the sons of my own teacher and those who have bound themselves by indenture and dedicated themselves by the medical oath; but none others. Further, so far as concerns the healing of patients, I shall prescribe to them, as my powers and judgment direct, suitable diet, and shall forbid what is detrimental and injurious. No entreaties shall induce me to give anyone noxious drugs, nor shall I take part in any such counsels. Likewise I shall exhibit to no woman any pessary which shall destroy her fruit at an early or late stage of pregnancy. I shall conduct my life and practice my art in holiness. Nor shall I cut even those who entreat me, but shall leave them to those who practice such surgical operations. Whatever house I enter, I shall do so for the good of the sick, and shall abstain from every hurt or injury, as well as from sensuality with man or woman, bond or free, whose body I have to cure. Whatever I shall hear or see, even when not called in for medical attendance, whatever I shall come to know in the ordinary intercourse of life, which it would be improper to repeat, I shall keep silence regarding it. I shall hold it secret. May I, keeping this oath in its entirety, enjoy my life and art in happiness, and have credit among all men for all time. May the opposite befall me if I break it."

Although the authenticity of this Oath has been doubted in high quarters, its bearing on the conduct of all honorable physicians from time immemorial, has been of so great a value, that, authentic or not, the oath stands for much as a summary of the very highest principles—a medical guide, so to speak, without equal.

Here is no lip-service in the cause of the art of medical practice such as we moderns are called upon to applaud on many occasions—impelled thereto by the indiscriminations of the uncritical who cannot differentiate between dross and the rich residuum of noble thought—but a message whose every word, on account of a remarkable intuition and an illimitable sincerity, must carry home to us, almost daily, the only interpretation of the temper and manner of the physician, whose medical life is a dedication to an idealism wrought from a manifold experience. Lessons pertaining to conduct, when scattered throughout many books, lose their value for the reason, that effectiveness suffers and intent is sadly weakened by the deplorable process of attenuation resulting from their passage through the crucibles of modern commentators. But when the

whole philosophy of a system to elevate a calling is contained in a few lines, and each line is informed with a thought that could be expanded into a many-paged essay, the succinctness of the whole, by virtue of the quality whereby a thing can be easily and readily memorized, must count for much in shaping the forces from within and without—the intellectual striving after idealism and the weakening of a gross materialism. And that this mooted Oath of Hippocrates is not without worth and value, the indignation and resentment which to-day characterize medical thought when outraged by despicable performances of vainglory and cupidity, attest.



Autocracy, as a means of educating others to our way of thinking, breeds only a bitterness of soul which leads to open revolt. It fails of good results because it lacks the gentleness and mental serenity which are foreign to an insistence founded on narrow-mindedness and the worst sort of puritanism. But precepts when conceived in the spirit in which the Hippocratic Oath was conceived and characterized by their terseness and directness, must necessarily bear fruit in all minds made receptive by the right sort of preliminary education. For they indicate the best that there can be of an introspection occurring in a scholar and philosopher—an iron-heeled destruction of those baser qualities inherent in our defective and dual natures, and a resultant elevation of thought that resolves itself into the kindest feelings for others, in so far as there is a complete absence of censoriousness, and the presence of a half-hidden hope that the thinker's severity toward himself might be the means of influencing others into his way of thinking.

BOOK REVIEWS.

A TEXT-BOOK OF EMBRYOLOGY. By John C. Heisler, M. D., Professor of Anatomy in the Medico-Chirurgical College of Philadelphia. Third revised edition. Octavo volume of 432 pages, with 212 illustrations, 32 of them in colors. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$3.00 net; Half Morocco, \$4.25 net.

The new, third edition of this work represents all the latest advances made in the science of embryology. Many portions have been re-written, and a great deal of new and important matter added. Heisler's embryology thus promises to remain the standard text-book.

ELEMENTS D'OBSTETRIQUE. Par le Dr. V. Wallich, Professeur Agregé a la Faculte de Medicine de Paris. G. Steinheil, Editeur, Paris, 1907. Price: Fr. 8.00.

"Essentials of Obstetrics" in our literature would indicate a little volume "especially adapted" to the needs of the student who is about to take an examination. He would feel disappointed in the neat little volume before us. It presents the scientific and practical "elements" of obstetrics in such complete form and contains so many new and original ideas of its author, that one cannot help wondering how all that knowledge could have been compressed into this small-sized book. Of course, this is partly accomplished by extensive use of a size of type which calls for the assistance of a strong reading glass, but is actually effected by most careful phrasing with the elimination of every unnecessary word. A short sentence like, "A large number of striae indicate a bad condition of tissues; in such patients it will be difficult to avoid rupture of the perineum," contains in a very precise form the result of an undoubtedly very large number of observations, and at the same time contains information which will prove new to many a specialist.

THE DIAGNOSIS AND TREATMENT OF DISEASES OF WOMEN. By Harry Sturgeon Crossen, M. D., Clinical Professor of Gynecology, Washington University, St. Louis, etc., etc. With 700 illustrations. C. V. Mosby Medical Book & Publishing Company, St. Louis, 1907. Price, \$6.00.

The characteristic features of this work are so precisely stated by its author in the preface that we can not do better than quote his own words in an attempt to convey to the reader an approximate idea of the scope of this unique text-book.

"This work is devoted exclusively to the diagnosis and treatment of diseases of women, as those diseases are met with in the office and at the bedside by the general practitioner. No space is given to other considerations (etiology, pathology, major operative technique), except as necessary to bring the work to its highest usefulness as a practical guide in the lines indicated.

"My endeavor all the way through has been to present the important points clearly and systematically—so clearly and systematically that they will be readily understood and well retained in mind for use at the bedside. To this end much thought has been given to the arrangement of the text, so as to show not only the facts of a subject, but also the mutual relation of the facts and their bearing and relative importance in the diagnosis and treatment."

It hardly can be said that American literature is wanting in good and even excellent works on gynecology, but, on the other hand, as compared, *e. g.*, with German literature it certainly does not contain many works which could be regarded as satisfactory text-books for students. It is one thing to present all phases of modern gynecology in a thick, profusely illustrated volume, and another to produce a text-book of gynecology which can be read and understood by the average student. This difficult task has been accomplished in a most happy and satisfactory manner by Crossen. His text-book is *clear* and *systematic*, possibly more so than any other English text-book of gynecology extant. In the opinion of the reviewer it will prove of interest to the practitioner, of value to the student, and indispensable to every teacher who takes a serious view of his difficult task of introducing his students into the intricate problems of diagnosis and treatment of gynecologic diseases.

HEILENDE STRAHLEN, ARBEITEN ÜBER DIE GRUNDLAGEN UND DIE PRAKTISCHE AUSÜBUNG DER STRAHLENTHERAPIE (X Ray Strahlung, Lichtstrahlung und

Radioaktivität). Gesammelte Aufsätze von Ingenieur Friedreich Dessauer, Band II. Preis Mark 3,20. Würzburg, A. Stuber's Verlag, 1908.

It is three years since the first band of "Heilende Strahlen" appeared, which was so well received by the medical profession. It is a great pleasure to announce this second set of monographs by the expert röntgenologist, Dessauer. The great value of these articles, from a scientific as well as from a practical standpoint, can be understood only by one who uses the x ray extensively and who has studied its properties. The beginner will hardly find a better book for his necessary study.

RÖNTGEN KALENDER. Begründet und herausgegeben von Prof. Dr. Ernst Sommer. I Jahrgang, Preis Mk. 3. Verlag von Otto Memnich, Leipzig, 1908.

This first calendar on Röntgen Ray diagnosis and therapy should be in the hands of every physician who uses the x ray. The amount of valuable information given in this little book is surprising. Articles on the history of röntgenology, on the technique and röntgentherapy by such experts as Sommer, Dessauer, Wetterer and Holz knecht, are always worth reading, and so are the papers on pathology and therapy of the x ray ulcer by von Kirystalowicz and the hints to physicians who are thinking of buying x ray outfits.

HORTON'S SYSTEM OF MEDICAL BOOKKEEPING, CONSISTS OF PHYSICIANS' PERPETUAL POCKET RECORD SHEET, AND PHYSICIANS' PERPETUAL SINGLE ENTRY DAY-BOOK AND LEDGER. Dr. Alexander F. Horton, publisher, 944 Marcy avenue, Brooklyn, N. Y.

The unique record sheet is adaptable to any number of patients, 240 names being visible with the ease of turning a page in the old style bulk visiting list. It is light, thin, carried with or without a wallet, consulted without turning leaves, posted as often as filled and then filed. Price for thirty patients a week is \$1.00. Larger ones proportionately higher prices. Leather wallet, with pocket, 50 cents extra. May be used with any kind of ledger.

The office ledger differs from any other on the market, is always posted as entries are made, a gauge at line in use giving statement to date instantly. Saves frequent transferring and reindexing of accounts; good until filled; may be used with any pocket record. Price \$6.00 net and express charges. Descriptive printed matter sent on application. We cordially recommend these labor saving books to such of our readers who desire to increase their collections by an easy, simple method of keeping accurate accounts.

DIE PATHOLOGISCH-HISTOLOGISCHEN UNTERSUCHUNGSMETHODEN. G. Schmorl. Vierte Auflage. Leipzig, F. C. W. Vogel, 1907.

The three former editions of this book are in universal use by pathologic workers. The appearance of the fourth has only added to the high appreciation entertained from the beginning for the work of the author. There is no other book on pathologic histologic methods that deals with the subject in such an objective way as this book by Schmorl, demonstrating in every instance the extensive experience and critical consideration of the multifold methods of investigation. The justification for such authoritative interpretation is given by the author's original improvements of older methods and by the establishment of methods, that in some directions, for instance the study of bony structures, have resulted in important scientific knowledge of the structural features of osseous tissues, previously incomplete. It is hardly necessary to call special attention to this book, because the appearance of a new edition will intuitively be the evidence that all who are acquainted with the older ones, will be benefited by the fourth edition. It is far superior to any other treatise on the subject, because it is based on the experience and critical interpretation of a man who, by his work, has advanced pathologic knowledge immensely.

A LABORATORY MANUAL OF INVERTEBRATE ZOOLOGY. Gilman A. Drew. W. B. Saunders Company, Philadelphia and London, 1907.

The work of Drew is the outcome of the instruction given at the Marine Biological Laboratory at Woods Holl, Mass. The work is characterized by an attempt to avoid teaching so-called typical phenomena and to lay the main stress upon the factor of adaptation. Therefore the discussion of single problems is studied with the view of demonstrating the variation in the processes of obtaining an identical effect, a method that, unfortunately, has been considered too little in many biologic and especially developmental and evolutionary problems. The diction is clear and definite and the subjects selected are presented in a form that stimulates thought and endeavor for original investigation. The little volume will be welcome and valuable to the study of the

biology of lower animals, not only to beginners, but also to workers who, perhaps, spend their time upon questions less important than those dealt with in this book.

A MANUAL OF MEDICAL TREATMENT OR CLINICAL THERAPEUTICS. I. Burney Yeo. 14th Edition. W. T. Keener & Co., Publishers, Chicago.

The first edition of this work was published in 1893, since which time fourteen editions have appeared, indicating the popularity and usefulness of the work. The author has endeavored to study diseases from the point of view of treatment. It is by the examination into the causation of diseases and the investigation of the true nature of the morbid changes, together with an exact knowledge of the properties and mode of action of drugs, that rational indications of treatment are arrived at. This work, in two volumes, presents in a concise form the rational indications for treatment and the mode of carrying them out. Special chapters are devoted to diseases of the organs of digestion, diseases of the heart and blood-vessels, of the blood and ductless glands, of the organs of respiration, tuberculosis, diseases of the liver, of the urinary tract, of the nervous system, constitutional diseases, and specific infectious diseases. The character of this work is too well known to need further comment.

INDICATIONS FOR OPERATION IN DISEASES OF THE INTERNAL ORGANS. Prof. Hermann Schlesinger, Vienna. Authorized English Translation by Keith W. Monsarrat. E. B. Treat & Co., New York City.

In view of the rapid development of the surgery of the internal organs, there is perhaps no chapter in medicine more important for internists than that of surgical indications. Unfortunately, there is in our colleges no chair devoted especially to a consideration of this subject. This knowledge, therefore, must be gleaned from experience and the observations of authorities on the subject. Schlesinger has written this work essentially for the practitioner. Chapters are devoted to the surgical indications in diseases of the brain, spinal cord, peripheral nerves, neuroses, diseases of the larynx, bronchi, lungs, plura and mediastinum, diseases of the heart, blood vessels, indications for venesection, diseases of the mouth, oesophagus, stomach, intestines, peritoneum, gall bladder, liver, spleen, pancreas, diseases of the urinary tract, joints and bones. Chapters are also devoted to indications for the induction of premature labor, operations on diabetics, and a chapter on the general influence of operations on the body. After all, the practitioner must first set the indications for operation, and he should be no less posted in matters of this sort than is the surgeon himself. A careful perusal of this work will aid him materially in fixing the indications for surgical interference.

DIET IN HEALTH AND DISEASE. Julius Friedenwald and John Ruhrah. Baltimore. 2nd Edition, revised and enlarged. W. B. Saunders & Co., Philadelphia and London.

The modern tendency in therapeutics, both in the teachings in our institutions and in the practice of the scientific physician, is toward fewer drugs and greater attention to dietetics and hygiene. A very large percentage of diseases may now be treated wholly throughout their entire course by rational dietetics and hygiene. Typhoid fever and pneumonia, in fact, the acute infections in general, may be treated almost wholly without the use of drugs. The diseases of the gastro-intestinal tract require for their proper treatment a profound knowledge of diet. Infant feeding depends wholly upon this knowledge. The conducting of rest cures, which have taken such an important place in the treatment of nervous cases, presupposes a thorough knowledge of dietetics. A work such as this is bound, therefore, to fill an important place in the library of one who desires to treat diseases according to rational indications. The authors have taken great pains to prepare a work that covers quite thoroughly the subject of dietetics.

THE PRACTICE OF MEDICINE: A TEXT BOOK FOR PRACTITIONERS AND STUDENTS WITH ESPECIAL REFERENCE TO DIAGNOSIS AND TREATMENT. James Tyson, M. D. 4th Edition. P. Blakiston's Son & Co., Philadelphia.

A work on the practice of medicine prepared by Tyson recommends itself to everyone acquainted with the history of medicine in this country. This work is prepared with the same care that has always characterized his efforts. It embodies almost purely the personal work of the author, with the addition, of course, of that broad knowledge of the subject with which every medical writer of worth must credit his colleagues. Chapters are devoted to infectious diseases and diseases of the digestive, respiratory, circulatory and

nervous system, as well as diseases of the blood and blood making organs, the thyroid gland, constitutional diseases of the muscular system, intoxications, animal parasites, etc.

THE SEXUAL QUESTION. A Scientific, Psychological, Hygienic and Sociological Study for the Cultured Classes, by August Forel, M. D., Ph. D., L.L. D., formerly Professor of Psychiatry and Director of the Insane Asylum in Zurich (Switzerland). English adaptation by C. F. Marshall, M. D., F. R. C. S. Late Assistant Surgeon to the Hospital for Diseases of the Skin, London. Rebman & Co., New York, publishers.

That subject of perennial interest to sociologists, psychologists and pathologists—the relation of the male species to the female as regards the sexual life—has received a fresh impetus in Professor Forel's book. Unlike most authors when dealing with the delicate matter of sexuality, Professor Forel never lapses into the deplorable tone of the unscientific, but always evinces an exalted and dignified attitude coupled with seriousness of thought and width of outlook. That the book will be of service to those whose studies have carried them into the realms of the abnormal where the debatable questions as to the suppression of prostitution, the *raison d'être* of sexual perversion, and the recognition of the third sex are under discussion, goes without saying; but even though "the cultured classes" may be indifferent to these problems, there is enough of interest in the work, as regards the evolution of normal sexuality, to hold their attention. The latter is not so unimportant as many doctors would have us to believe, for by close attention to its many stages, misconception of what is really normal in our sexual life, would be done away with, thereby inducing a calm philosophy on the part of the doctor, so that a means would be at hand to combat the mental anguish of the ignorant when obsessed by sexual delusions.

OPERATIONS OF GENERAL PRACTICE. Edred M. Corner, M. A., M. C., M. B. (Cantab.), B. Sc. (Lond.), F. R. C. S. (Eng.), and H. Irving Pinches, M. A., M. B., B. C. (Cantab.), M. R. C. S., L. R. C. P. (Lond.). Pp. 296. 170 illustrations. Cloth, price, \$5.50. New York: Oxford University Press, 1907.

In the preface, the authors clearly set forth the object of this book. An attempt has been made to meet a deficiency in medical education. Only a small number of students enjoy the privilege of post-graduate work in a hospital of the first rank, and consequently they enter the profession with an education which is deficient in the practice and performance of the many small operations which lie on the borderland between medicine and surgery. The object of this book is to familiarize the practitioner with these surgical proceedings which all physicians are frequently called upon to perform and which are not sufficiently elucidated in many of the larger surgical works. The authors have not attempted to discuss the larger surgical problems and operations but have confined the volumes to minor surgical procedures. The book is well printed and the illustrations are excellent.

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EDITORIAL.

THE ADVANTAGES OF A SCIENTIFIC EDUCATION FOR THE PUBLIC.

In Dr. Herbert L. Burrell's presidential address, "New Duty of the Medical Profession: The Education of the Public in Scientific Medicine," at the fifty-ninth session of the American Medical Association, we note one point which dominates all the rest and that is the recurrence of the thought that so long as there is no close alliance between physicians and the public to effect the transmission of the best medical thought of to-day from the former to the latter, and its apprehension by the latter, progress in respect of the lessening of the evils resulting from ignorance can not attain the proportions desired by those medical men of light and leading, who from past experiences have learned the lesson that to batten down the corners of medical history and progress so that laymen cannot but regard medicine as a mysterious art and not as a science, is inimical to the health of the community.

This synoptic view of what one might call, an unnecessary predicament in the course of medical evolution, reflects but little credit on the exponents of the art and science of medicine. For with them has rested and will rest the penalties resulting from the defects in the enlightenment of the public, since it cannot be expected, in all reason, that the general education of a public is advanced enough to be cognizant, without instruction from the physicians, of the salient features of medical progress as they present themselves from year to year. That there is a way out of this difficulty has been tentatively tried by the free lectures on medical subjects in Chicago and at Harvard; experiments of so decided a success that Dr. Burrell needs no justification for saying that "free lectures to the public on selected medical subjects constitute one of the most useful methods of spreading information."

But when Dr. Burrell speaks of the press as a possible powerful agent for spreading the news pertaining to scientific medicine, even though his

suggestion that "these articles should be judiciously edited" be adopted, he displays an optimism that is quite childish, in so far as our press will always, on account of its prerogatives derived from freedom of speech, refuse the harnessing of its caprices whereby its existence with the masses might be jeopardized. This is not meant to be a scathing criticism of the strange blending of good and bad qualities as instanced in our daily papers; rather is it a mere statement not only of the peculiar conditions out of which our press arose but also of its purpose and its mission. If we have read aright what this mission is—and our many experiences as newspaper readers covering many years ought to count for much—we do not hesitate to say that as yet the prosperity of any one of our newspapers is not secure enough, from the publisher's point of view, to print only articles "signed and published under the authority of the Board of Public Instruction." Such articles by their weight and authority would undoubtedly appeal to numbers of readers, but if interspersed between those we now read, they would lose in interest and appear quite paradoxical for two very good reasons: First, without the reporters' irrepressible imagination even the serious reader, accustomed, as he has been, all these years to the imaginative writings as put out by these scribes, would be tempted to turn to the lighter and more engaging, though less truthful, article; and, secondly, the juxtaposition of the two would have all the drawbacks which result from a policy that would not be long in having its inconsistencies proclaimed from the housetops. Now what publisher of to-day, with his finger on the pulse of the masses, would consent to make disastrous inroads into his finances on the foolish grounds of inconsistencies that might not offend a handful of readers?

Verily Dr. Burrell's faith in the possibilities of the press and the already much-harassed family practitioner as educative factors in the spread of scientific medicine, ought to be rewarded by the recognition which is always given to an apperception that is *pure* enough to enjoy all the Kantian flavor which happily differentiates the term from mere perception. For not only is he not willing to suffer any encroachments on the domain of the family practitioner by the specialist, unless the practitioner and family are in complete accord, but he perceives with the additional apperceptive, *I think*, that "the well-educated family practitioner now has a new duty. He it is who should be the instructor of the family. This is particularly true in relation to the subjects which in medicine can not with propriety be taught the public in masses; these subjects may be taught most appropriately to the parents and, if need be, to the children by the physical counselor of the family."

Our sympathies have always been with the family practitioner for reasons only too well-known to every one to be mentioned here *in*

extenso. Of all the sorely tried individuals who are continually brought face to face with the nether side of life, its low lights and sordid tragedies, the family practitioner is easily in the lead for the reason that there is no escape for him. Again for reasons over which we as physicians have no control, since specialism is not only peculiar to medicine but to all the different kinds of education, his position as an authority is precarious, to say the least. Now are we to weaken this position more than obtains to-day by making him *less* of the time-honored doctor with medicines cordially hated by the younger members of the household but nevertheless taken quite dutifully, and *more* of the instructor of scientific medicine, whose high purpose should be to teach and warn and gently reprimand? Surely it is asking too much of the family practitioner whose hours for work have never been defined by ardent champions of normal work and rest, to assume the additional burden of instructor of scientific medicine when his rating as scientist, at least in educated families, is unfortunately so low at present that only scant attention would be paid to his words by worldly wise and unconvinced parents and the majority of their precocious children.

A MISGUIDED CONCEPTION OF PATRIOTISM.

Schopenhauer says: "I feel respect for the man—and he is one in a hundred—who, when he is waiting or sitting unoccupied, refrains from rattling or beating time with anything that happens to be handy—his stick, or knife and fork, or whatever else it may be. The probability is that he is thinking of something." Surely the German philosopher must have had some ideal man in mind when he penned his lines, for our observations in the past have taught us that the characteristics of man are decidedly against idleness of hands and activity of brain. Of course our studies are more or less confined to our own compatriots, but since human nature is the same the world over, it is not wandering far from the truth to say, that as long as the human race endures, idleness of hands will be considered, by the many, a badge of dishonor—the despicable sort that results from laziness.

At no time of the year is Schopenhauer's dictum more fallacious than on the day we celebrate in the brute fashion of the nomads and heathens of old, namely the Fourth of July, because though a few among us are idle and perhaps are thinking of the barbarities incident to the day, the fruits of our idleness and thinking are so small that instead of saying the man who should command our respect is one in a hundred, we must perforce admit that at least with us he is one in a hundred thousand or more, and that his "thinking of something" has rarely anything to do with the atrocious scenes about him. We are prompted to write in this

wise not only on account of the fewness of the thinkers who give vent to their indignation in the press but to the frivolity of a people whose serious thought is so decidedly evanescent that almost directly the calamitous day is over, other subjects of a more pleasing nature engross them.

Of the few who have thus far raised their voices in protest, in anticipation of this year's celebration, the authoress of the article "Our Barbarous Fourth" in the *Century* for June deserves some mention, if only to point out the obliquity of her point of view. Her citations from letters which were written her to show the mild and dignified observances among other civilized folk in connection with their own patriotic celebrations, while interesting, fail to make the shaft go home for the reason that no two peoples take their pleasures in exactly the same way. To tell us that Frenchmen as described by Marcel Prévost are refined when the wave of patriotism engulfs them on the 14th of July, that Dr. Eugène Richard writes a "touchingly beautiful account of the observance of Switzerland's birthday," that Professor Hugo Münsterberg of Harvard University gives a "delightful description of Germany's greatest festival, the Emperor's birthday," and that even the Japanese are calm and well-mannered in the face of patriotic excitements, may be quite a budget of news to some, but as a lesson in manners to those amongst us—and now we are speaking of the multitudes who have for years become inured only to one way of celebrating their national holiday—it has all the weaknesses of the many reprimands from foreign sources which have been ours by gratuity, ever since Mrs. Trollope took the initiative, some decades ago, to expatiate on our vulgarities, hoping thereby to whip us into some semblance of the orderly.

In view of what has not been accomplished by the many pratings on our execrable behavior, as prelected by many foreigners and a handful of temerarious native social philosophers, we deem the times ripe to inquire into the causes of our apathy to the barbarities so graphically illustrated on our national holiday. That some light may be thrown on our apparent sympathy with an annual carnage unknown in other countries, by stating that custom has somewhat hardened us to some of its most undesirable aspects, is not so much a plea for its continuance as an explanation of a peculiar mental attitude. Now it must be plain to all that when a people thinks lightly of the grave problems of life, problems which drive an older civilization to the furthest lengths of introspection, it cannot be expected to wax indignant because hands and feet, and sometimes lives, are sacrificed in pursuit of pleasures that have all the puerilities plus the dangers of an inadvertence peculiar to a patriotism born of a childish, or rather primitive, conception of prowess and hardihood.

Although it is a fact that placing a lighted match in a can filled with powder, igniting a giant firecracker, or using a pistol as only an amateur would, connotes danger to eyes, hands, and limbs in general, the inscrutability of the ways of man, especially when the emotions are fired by a patriotism founded on the objectives of noise, clamor and bluster, must be held responsible for our indulgence in a perennial avalanche of foolhardiness. The aftermath of every Fourth is an apocalypse of wretchedness; and despite the fact that the pundits insist that repetition of acts causing danger and discomfort eventuates in wisdom, our persistence in our ineffable stupidities on "the glorious day" falsifies the contention to so great an extent, that it would be the quintessence of superficiality to assert that with the coming of years the grim lesson will be sufficiently digested to cause reform. Only when the right sort of home education—the education that bespeaks a reverential spirit for order, for quiet and for the personal liberty of others—obtains with us, will the dawn of a saner conception of patriotism be effected.

THE EDUCABILITY OF DIFFERENT RACES AND TYPES.

Ethnic factors in education deserve far more medical attention than is given them, for it is a question of brain anatomy. The subject was touched upon by Edgar L. Hewitt some years ago (*American Anthropologist*, January, 1905) in an address to the Social Science Section of the American Association for the Advance of Science, though he did not mention the real reason for making any differences in the education of the races. It is about conceded that we have been wrong in forcing "higher education" on the Indian, for he can not comprehend or use it. The graduate of Carlisle goes back to blanket life and draws rations from the Government. We should have taught him how to make a living in the new environment thrust upon him. Similarly the higher education of the negro has been dropped because he could not absorb it, nearly all of the highly educated ones being half white or more so. An industrial education has been found to be the only one the full blood negro can accept, and remarkable success is rewarding these new efforts. The failures with the negro and Indian are now known to be due to the fact that neither one has the brain with which to do the higher thinking. Not only is that organ smaller, but it is of more primitive type, with fewer cells, convolutions and connecting fibres.

The same laws apply in a general way to variations in any one race. The work of Spitzka (*Transactions American Philosophical Soc. Part IV—1907*) and of numerous European anatomists show that on an average the brains of eminent men are larger and better organized than those of ordinary persons. The apparent exceptions are largely ex-

plained by the fact that eminence has been achieved by devotion to a limited specialty and there is a growing mass of evidence that it is due to special organization of limited areas of the brain. From these few instances attempts are now and then made to prove that intelligence is dependent upon "quality" of material—whatever that means—as though the total amount of brain matter were of no consequence.

Ethnic factors in our public schools then demand attention, for we are attempting to force many types of brain through the same course of training. Attention has repeatedly been called to the fact that in European countries illiteracy, in a very general way, is inversely proportional to the average brain weight of the nations. Where education is universal, the intelligence is already the highest. Illiteracy of native Americans descended from the higher European types, has been an enigma, except where isolation has been the cause. Some sections of the country where school advantages have been ample, are deplorably bad. Perhaps it is also a matter of incapacity as it has long been suspected that children drop out of school through mental inability to take the higher courses, not through necessity to make a living. If all this is true then it should be subject to anatomical proof, but unfortunately we know little about the brain. Is it not possible that with the lower races flocking here and lower types of natives, we are making the same mistake as with the Indian and negro—trying to train a brain which does not exist? Surely the matter is serious enough to demand professional study on the part of physicians. Every now and then there is an unwise assertion that the educational system is a failure, and a demand is made that it be replaced by an industrial education as at Tuskegee—the school to take the place of the old fashioned apprenticeship and the graduates turned out ready to make a living—a stride towards socialism. Yet there is just enough anatomical basis for these criticisms to cause us to pause and determine whether we are correct in thrusting higher education upon those unable to accept it, and whether the money had not better be spent upon the lower grades beyond which such a huge proportion of children never pass, reserving the higher courses for the few able to pass rigid tests as to ability. Perhaps a study of ethnic types in the high schools, colleges and universities will throw light on the subject. It is a huge, uncultivated field bound to give rich returns, as we may find that most of the types in the higher schools are descendants of immigrants from countries where there is a large number of higher schools per million of population, and that our lower types have no use for the higher schools for the same reason here as in Europe—inability to use them.

At least one thing is certain—the extreme necessity of training what brain exists in each little citizen. The public school system must be de-

veloped more and more. But we must strongly combat the popular delusion that such education causes an effect in the way of increased number of cells and fibres, for Donaldson (*Growth of the Brain*) shows that the cells cease their multiplication before birth. Even if there were an increase, there is no evidence that such acquired characters are ever transmitted. Pedagogues quite commonly assert that education for two or three generations will markedly increase the intelligence of the descendants, but there are no facts whatever upon which to base such an opinion. Indeed Greece was on the down grade at her greatest pedagogic period. Education is a process of making a better society of the material at hand by enhancing the economic value of each unit—eugenics does not enter the question at all. In Europe, apparently, it is intelligence which is developing education, and not education which has evolved the larger and better brains which characterize the higher races.

But it is wise to inquire whether the perpetuation of American institutions demands an education which was not obtained by the men who created those institutions in the seventeenth and eighteenth centuries. Will not the men with brains rise without prolonged education, as did Franklin, Lincoln and Garfield? Of course no one doubts the utmost importance of an advanced education to those who can take it and that our self-made men would be infinitely better off if they had been schooled, but are we not injuring too many boys by thrusting on them a training of which they are unable to profit in the struggle for existence? Thousands are starving in all the professions, who should be on the farms like their ancestors, raising healthy country lads instead of anemic, underfed city weaklings. The "failures" have muscles for mechanical work but not brains for intellectual labors, and if the muscles had been properly trained, they might not have been "failures." Percherons are not trained for the Derby, and our pedagogues may find therein why such a small percentage of children who enter a high school are able to graduate.

The great discussion now going on as to the large percentage of "backward" children in the public school, might end if it is shown that they are as far advanced for their age and brain as they should be, and that forcing them on may be injurious. In other words there is a danger that pedagogy, unchecked by ethnic brain studies, may lead itself astray unless each child's abilities are studied as carefully as a horseman studies a colt's, and then training adopted to suit each individual, for no two boys are exactly alike. Surely brain anatomy deserves more study, as it does seem that the medical profession is bound to become a powerful sociological instrument in more ways than the mere cure and prevention of disease.

A PAINTING WITH A STORY.

The possibilities of making a picture the instrument by which a fillip is dealt to that sort of stagnation which results from the dormancy of a most interesting subject, is well put and tragically described in the Hon. John Collier's painting "The Sentence of Death," now on exhibition at the Royal Academy, London. The purport of the painting can be understood by physicians at once, for the interrogative the artist wishes to convey to the thinking public, especially the medical part, is the rather ancient one, battered and frayed by many fatuous discussions, as to whether or no a physician should tell a patient the truth in regard to the hopelessness of his case.

That the artist is decidedly in favor of the physician withholding all knowledge bearing on the fatal outcome of the case, from his patient, is written large across his work, for the agony depicted on the young man's face when he hears his doom is so intense that it does not require a deal of imagination to realize his fearful mental anguish in anticipation of the end. But although these be the artist's sentiments, physicians at large cannot be guided by them in every instance, since not infrequently the importunities of a case make it imperative on him to ally himself with truth, or take the consequences of considerable opprobrium on the part of his fellow-practitioners for insincerity and prevarication. All of which leads up to the question whether a physician's duties lie with his patients or with the ethics of his profession. This is a very old question that even after many years of wrangling has not yet reached the outposts of solution; in fact, studious attention to the matter compels us to say that to vanquish criticism from physicians and laity alike, would require many masters of the art of fence. But even adepts would lack the acumen to make fine distinctions in certain cases where the choice lay between the dictates of stern duty, with its woeful mental consequences to a patient unsupported by the necessary ballast of stoicism, and the looseness of language making for much to assuage a patient's worst fears, but condemnatory unless the physician wishes to be criticised by his fellow-workers as a conscienceless unit in a profession in which conscience, in italics, is the watchword of conduct. Now though the artist of "The Sentence of Death" is to be commended for interpreting a mooted question in a masterly way, thereby reviving the *pros and cons* of a subject which our indifference allowed to rest in the fallow field of thought, we are not sure that the presentment of its tragical features will convey sufficient weight to make it a method of thought applicable to physicians. For at no time in a medical man's practice are his dilemmas so abysmal, as when he is called upon to be a blend of reasoner and humanitarian in the face of the Supreme Moment.

OPINION AND CRITICISM.

THE SPECIAL PSYCHOLOGY OF WOMEN.

Dr. Thomas Clay Shaw, Lecturer on Psychological Medicine at St. Bartholomew's Hospital, London, in a lecture recently delivered at the Institute of Hygiene, on the above subject, shows what manner of man he is, for his audacity, not to say his incisive originality, is quite unusual, since his coign of vantage is one that hitherto has not been taken by any scientist of standing when discussing the mental processes of woman, in their subjective and objective ramifications. When we remember how often we have stumbled on the difficult path of thought involved in the endless discussions as to the dis-association of mind in the two sexes, it is with a sense of relief that we read the virile words of this latest investigator. In respect of common sense could there be anything better than "there are men of whom it may be said that there is much of the woman in them and there are what are called masculine women who seem to be composed largely of the attributes of the male mind * * * we shall see that much depends upon education and environment and that except in one particular direction there is in reality little difference between the two classes of mind?" A recent essayist, in his book, "*Apologia Diffidentis*," says "there glimmers a wealth of truth in the penumbra beyond our lanterns," and though the truth of this axiom is written large in the history of all the sciences, custom plays so active a part where investigations are being prosecuted in search of scientific truths, that the conventional spirit often dominates the efforts of the investigator to such an extent that to throw it off, he must indeed be possessed of a great degree of originality and daring. Now all that Dr. Shaw says on the mental equality of the sexes is not only new but iconoclastic when we recollect the importance which scientists attach to the difference in weight between the brain of the man and that of the woman—an importance which suffers on account of the fact that "we know nothing positive about the relative qualities of the brain in the two sexes and no one can tell under the microscope whether he has a male or female brain to deal with." Having arrived at these startling conclusions one would think that Dr. Shaw would at once put on his buckler in defense of womankind eager for an extended suffrage that would not preclude judicial and political positions. But though scientifically daring and original, he weakens somewhat as an advanced sociologist, for the reason that he is fearful of the state's prosperity should

both sexes hold offices at the same time. His arguments for a monosexual judiciary made up of one or the other sex, are gracious enough to please some of the less aggressive female aspirants after judiciary and political honors, but they lack the force and trenchancy of that candid and greater psychologist and sociologist, Herbert Spencer, when he expressed his views on the same subject. In the recently published "Life and Letters of Herbert Spencer," by David Duncan, LL.D., is printed a characteristic letter of Spencer's addressed to John Stuart Mill, under date Yarrow, August 9, 1867, from which we quote the following excerpt. "Men in their political actions are too much swayed by proximate evils and benefits; and women would be thus swayed far more. Given some kind of social suffering to be cured or some boon to be got, and only the quite exceptional women would be able to appreciate detrimental reactions that would be entailed by legislative action. Political foresight of this kind, uncommon enough in men, is extremely rare in women. Of course whoever holds that the minds of men and women are alike will feel no difficulty of this kind. But I hold them to be unlike, both quantitatively and qualitatively. I believe the difference to result from a physiological necessity and that no amount of culture can obliterate it. And I believe further that the relative deficiency of the female mind is in just those most complex faculties, intellectual and moral, which have political action for their sphere."

AN EDGED CRITICISM.

Wm. H. Allen, writing in the June *Atlantic* on "A Broader Motive for School Hygiene," makes a number of pertinent remarks on a subject which generally receives but scant consideration. The small accomplishment of desired results from the usual instruction in school hygiene, has often struck observers with force, but that the reason lay with the teachers and not with the pupils, will come as a bit of news to those who wish to be classed with the discerning. It has been the custom, for many years, to ascribe the failure to grasp certain theories and the advantages of their practical application to the insuperable stupidity of pupils but that this idea is wrong the article in the *Atlantic Monthly* makes plain to us. According to the writer, our teachers are only moral censors when they teach school hygiene, for they aim their blows continually at "whiskey, beer, cigars and cigarettes," overlooking all along the importance of making "every school child a militant teetotaler who abstains from measles, typhoid, scarlet fever, tuberculosis, dirty streets, and impure air." Although it is a fact that stands foursquare that intoxicants and tobacco are not desirable adjuncts to our daily fare, to make them the target for the teachings of school hygiene, to the exclusion

of other important matters which lie in ambush to waylay the unwary, is making an unnecessary cult of certain bugbears dear to our penny-a-liners. Proper school hygiene should call to action, on the part of school children, an intelligence that would grasp the full meaning of all its elemental laws, not with the purpose of frightening them in case of inadvertent transgressions, but with the idea that only by a strict observance of the behests of Hygeia, can many diseases be avoided. That this is not done in our schools to-day is shown conclusively by the writer in the following excerpt which eight text-book writers relate: "A baby was once killed by washing its head with tobacco water; a boy once drank some whiskey from a flask and died soon after; any drink that contains alcohol is a poison to hurt and at last to kill; a boy who uses cigarettes is irresistibly led to a violation of the law; by giving drinks such as root beer to children an appetite for alcohol may be cultivated; the flesh of these unfortunate persons becoming saturated with alcohol took fire upon being exposed to a flame as of a lighted candle, or indeed without any external cause; nicotine stunts the growth of the (young) body as a whole, retards and weakens the nervous system, makes the user cross, peevish, and unfits him for the best society; a murderer was about to kill a baby and the little creature looked up into his face and smiled, 'but, he said, 'I drank a large glass of brandy and then I didn't care.' "

LITERARY NOTES.

In connection with the Türk-Czermak Jubilee recently held in Vienna, it would be well for all laryngologists, who are interested in the history of the laryngoscope, to read "Garcia the Centenarian and His Times," by M. Sterling Mackinlay, M. A., Oxon. (Edinburgh and London: William Blackwood and Sons.) In Chapter XIV. there are all the details of the controversy as to priority of discovery in connection with the laryngoscope. These details, while of small moment to the general practitioner, are fraught with considerable interest for the throat specialist, because he must feel that, especially as regards the discovery of the laryngoscope, honors should be given to him who deserves them. That Garcia was the first to see the interior of the throat by means of a mirror (it was his own throat, by the way), is beyond dispute; but not being a clinician, this one examination satisfied his curiosity, whereas, Türk and Czermak used the instrument for diagnostic purposes, thus bringing out its wonderful possibilities as a means to a great end—the proper and scientific treatment of innumerable diseases of the throat, which had hitherto baffled the physicians. How Garcia stumbled on the discovery is best told in the author's own words: "One

day in the September of 1854, when on a visit to Paris, he was standing in the Palais Royal. Suddenly there came to him an idea. 'Why should I not *try* to see it?' How must this be done? Why, obviously by some means of reflection. Then, like a flash, he seemed to see the two mirrors of the laryngoscope in their respective positions as though actually before his eyes. He went straight to Charrière, the surgical instrument maker, asked whether they happened to possess a small mirror with a long handle, and was at once supplied with a dentist's mirror, which had been one of the failures of the London Exhibition of 1851. He bought it for six francs. Returning home, he placed against the uvula this little piece of glass, which he had heated with warm water and carefully dried. Then, with a hand-mirror, he flashed on to its surface a ray of sunlight. By good fortune he hit upon the proper angle at the very first attempt. There before his eyes appeared the glottis, wide open and so fully exposed that he could see a portion of the trachea. So dumbfounded was he that he sat down aghast for several minutes. On recovering from his amazement, he gazed intently for some time at the changes which were presented to his vision while the various tones were being emitted. From what he witnessed it was easy to conclude that his theory, attributing to the glottis alone the power of engendering sound, was confirmed, and thence it followed that the different positions taken by the larynx in the front of the throat had no action whatever in the formation of the sound. At last he tore himself away, and wrote a description of what he had seen."

Professor Dubois of Berne, Switzerland, shows in his new book, "The Education of Oneself" (*L'Education de soi-même*. Paris: Masson et Cie.), that he is the fortunate possessor of the gentle qualities of the philosophy of introspection, not to mention the high literary charm, to which we have become accustomed in A. C. Benson's "The Upton Letters," "From a College Window," and "Beside Still Waters." The titles of the chapters—The Conquest of Happiness, Conscience, Education, Egoism and Altruism, Meditative Thought, Humility, Moderation, Patience, Sincerity, etc.,—are in themselves instructive enough to convey to the reader, at once, the sort of book he has in hand. And that the sort is good will be shown him after reading a few pages, for here are no imprecations against the littleness and falsehood of mankind, in the manner of Shakespeare's *Timon of Athens*, but the kindest advice and the gentlest instruction on disciplinary attitude towards ourselves and forbearance towards others. The tendency of the times, as expressed in latter-day essays, is to a great extent taken up with the betterment of character, the development of the gentler human qualities, and the furtherance of a spirit of toleration; and that Professor Dubois is at one with this tendency, the book before us bears excellent witness.

ORIGINAL ARTICLES.

UNILATERAL DISLOCATION OF THE CERVICAL VERTEBRÆ.*

By MALVERN B. CLOPTON, M. D., of St. Louis.

Any discussion of this not unusual accident would be uncalled for, were it not for the fact that occasionally uncomplicated dislocations are overlooked, and there is a small number of cases which present at the start few cord lesions, but gradually serious symptoms come on, which may terminate fatally unless an early reduction is effected. Another reason for bringing this subject before you is to draw attention to a simple effective method of treatment which was suggested some time ago, but improved and accurately described more recently by Walton.¹

Frequency. As a contrast to our present knowledge, Sir Ashley Cooper,² who must typify the best surgical mind of his time, says "If luxuation of the spine ever does occur, it is extremely rare, * * * since I have not met a single instance of it, those injuries all proved to be fractures with dislocations." In the later edition of his work his nephew has added instances of spinal dislocations, and he admits that the elder's views were incorrect. To determine the exact frequency of the unilateral dislocation is impossible, but we can gather from the tables of Ashhurst,³ who found 29 unilateral cases in 394 spinal injuries, that the lesion is one of the most frequent types of traumatic displacement of the spine. The great majority of all spinal dislocations are of the cervical region, because the bodies in this region are small, and the interlocking of the articular processes is less firm than lower in the column. The fifth cervical vertebra is most commonly dislocated, as might be expected from the fact that in the neck flexion and extension are freest between the third and sixth vertebræ. Dislocation is rendered easy by the comparative horizontal position of the articular processes in the cervical region. Probably some of these dislocations go unrecognized from the lack of familiarity of the practitioner with the characteristic features, perhaps also from a hesitancy to make a diagnosis of so serious a condition. But there are a great number of individual cases reported, and in more recent literature the observations have been of the uncomplicated cases, in contrast to the earlier reports which dealt in large proportion with the fatal cases that had come to autopsy.

Pathology. In this lesion, the articular process of the upper vertebra on the dislocated side slips forward; in the incomplete form it rests on the crest of the lower articular facet, in the complete form it drops into the intervertebral notch and rests on the pedicle of vertebra below. The articulation on the opposite side holds. The intervertebral disc may not be torn. Only in one instance has the vertebral artery been noted as

*Read before the St. Louis Surgical Society, February 12, 1908.

torn. The spinal canal is very slightly encroached upon, due to the backward expansion of the lower borders of the laminæ. In the cases where the cord lesions are marked the force applied was always external, and most frequently direct. Of the nerve and cord lesion more will be said later. While in the records of the cases examined no instance of unilateral dislocation of the first or second vertebra have been observed, there are no reasons why such dislocations might not occur, and bearing in mind that in the upper three articulations, cord pressure would involve the centers for the phrenic and death would ensue from respiratory inhibition, the lack of recorded instances of this injury speaks for the extreme rarity of this dislocation. From the third to the sixth vertebra numerous instances are noted, most frequently the fifth.



Fig. 1.—Incomplete unilateral dislocation of 6th cervical vertebra.
(Tracing from x ray of Case II.)

Symptoms. The symptoms described are for these lower joints. The position of the head and neck direct to a correct understanding. Making allowances in rare cases for a compensating turning of the head at the atlo-axoid joint, the picture generally presented is quite constant. With the dislocation of the articular process on the right the head and face are rotated to the left. If the dislocation is incomplete with the articular facets still in contact at the extreme limits, the neck and head is directed away from the dislocated side; if the articular process has slipped into the intervertebral notch and the dislocation is complete, the neck and head are tilted toward the dislocation side. As Walton⁴ says: "The side on which dislocation has occurred can always be determined therefore by the direction of rotation: the question whether

the articular process has slipped into the notch, may be determined by the tilting of the head." In bilateral dislocation the head will be carried forward and tilted backward.

One of the cases I have observed will serve as typical of the uncomplicated unilateral dislocations, in this instance of the left side.

C. H., a healthy muscular youth of 19, during an athletic exhibition was walking on his hands. His right arm weakened under him and he fell, striking his head on the left side and coming down on his left shoulder. He heard a distinct snap just after his head struck and felt a sudden pain in his neck and realized that he was unable to bend his neck. He walked away and later visited a dispensary where liniment was ordered for the soreness, the injury being unrecognized, and later the same day he visited another clinic, where on account of the serious nature of the injury he was referred to the Mullanphy Hospital, where I saw him 24 hours after the accident. He was up and about, as any reclining posture gave him great pain, and he had been unable to sleep the night before. His neck and head were held rigidly, the face turned to the right and downward. The neck was directed slightly to the left and low in the base of the neck on the left side was a rounded enlargement which was very tender. The sterno-mastoid on the left side was relaxed, but on the right side it was tight. Movement was limited to a slight forward and backward nod of the head, and any attempt to straighten the head was very painful. On account of the much developed musculature it was impossible to feel with any certainty the spinous processes or to determine what was the nature of the enlargement on the lower left neck or to make out the transverse processes. There were no nerve disturbances of the arms or any part of the body, he walked perfectly well, but complained of some pain in the neck with the jolting of each step. To confirm the diagnosis of left unilateral dislocation of the sixth cervical, an x ray photograph was made. Under ether, which was administered to the patient while in the setting position, a reduction was easily accomplished by the "recto-lateral flexion with rotation method," which I shall speak of later.

This case is reported at length because it illustrated most of the points of diagnosis. The position of torticollis, with the wrong sterno-mastoid taught, the enlargement at the root of the neck, made up of the displaced transverse processes with contracted muscles, make the pathognomic signs. The spinous processes, except in muscular subjects, can usually be felt, with those above the level of the dislocation rotated to the side of dislocation. The bodies of the upper three or four vertebræ when dislocated can be felt or seen in the pharynx.

By far the most important features of these cases are the nerve and cord symptoms, which are less severe in dislocation of one side than when the whole vertebra slips forward, and many times there may be no symptoms of any nerve injury. The breadth of the canal and the relatively small size of the cord, allow these slight displacements to leave sufficient of the lumen for the safe passage of the cord. As Blasius determined it is almost always only a simple compression of the cord without crushing. If there is much pressure on the cord the veins are prominent, the face suffused, the eyes prominent and the patient suffers

great distress and there may be dysphagia. Paralysis may come on early or late and it is not uncommon for parasthesia to be experienced in the extremities. In the 12 cases that have come under Walton's observation paralysis (obviously from root pressure) occurred only in two. Occasionally cases show few or no paralytic or nervous symptoms to start with, but soon increasing and becoming more dangerous in character, they may lead to early death or leave a lingering paralytic to wear out from exhaustion. In a case mentioned by Liddell,⁵ where paralysis with dysphagia instantly appeared, death ensued in 6 hours, and on dis-

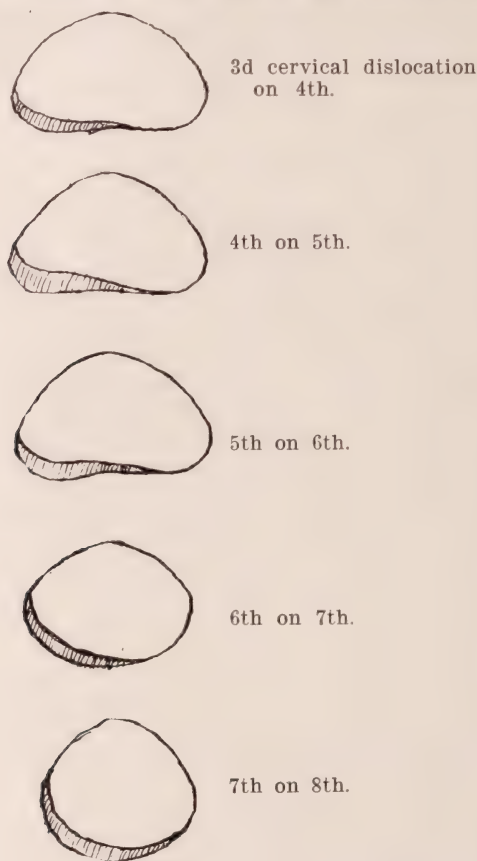


Fig. 2.—Outline of bony canal, shaded part showing the amount of encroachment in unilateral dislocations.

section an incomplete unilateral dislocation of a cervical vertebra was found. In Reyburn's⁶ case a unilateral dislocation of the fifth cervical was followed immediately by a slight hemiplegia, which continued to increase, after two unsuccessful attempts at reduction, and when reduction was accomplished nine weeks after the injury the rapid prognosis of the paralysis was not checked and the patient lingered two weeks longer, when he died and an abscess was discovered in the center of a much softened and congested cord. Thus if patients survive long

enough, signs of a more or less acute inflammation appear. While this reaction is not frequent or usually severe, yet in a number of cases pus has been found in the meninges or even in the center of the cord, or the cord may be softened and change color or be reduced to a pulp. High up in the cervical region, there may be great dyspnoea, or instant death if the respiratory center in the medulla is involved. If the upper origin of the phrenic is involved (4th cervical) paralysis of the diaphragm and intercostals ensues and speedy death from asphyxia, but if below the fourth nerve origin, life may be prolonged by the uninterrupted activity of the diaphragm.

Haematomyelia is not an infrequent result of this injury. In six of Thorburn's⁷ cases it was found. Simpson⁸ quotes Martini, who had a case of diastasis with a clot 3 cm. long in the center of the cord, and also mentions a case Quénu. Kocker⁹ and Wagner¹⁰ each report a case.

Diagnosis. As Keen¹¹ puts it, diagnosis is established rather on probability, based on rigidity of the neck, its curve in the position of wry neck and the twist turning the face to the opposite side. To distinguish from torticollis, the contraction of the sterno-mastoid is the guide, which in wry neck is taught on the side away from which the face is turned, but in unilateral dislocation is taught on the side to which the face is turned. Simpson⁸ states that cases occur where diagnosis between muscular rheumatism and unilateral dislocation by muscular action can only be made by an attempt to reduce the displacement. In cases of the spine as in the other conditions, the history of the case is important. Perhaps the greatest aid in diagnosis however is the x ray, and by antero-posterior and lateral views we gain information of a definite nature. While some contend that the antero-posterior plate is the most valuable, it is shown by one of the accompanying cuts (Fig. 1), that at times we can show in the lateral view a most distinct picture even in dislocations of the 6th vertebra in a large muscular man.

Etiology. Unilateral dislocation is produced by carrying movements beyond the normal limits by any force which over-abducts or over-rotates the upper part of the column. Volker¹² collected 14 cases where the displacement was due to muscular action alone and two of Walton's cases gave similar histories, one, a tall slender man of 28 years, had an incomplete dislocation while using military brushes, another, a child, while running around a corner turned her head sharply and it caught, due to a unilateral dislocation of the 3rd vertebra. Schiele¹³ reports a case of a man who went to sleep with his head hanging over the bed rail, and on waking suddenly lifted his head and incompletely dislocated one of the upper vertebræ. The movement which produces the lesion is sudden, violent, ill regulated turning, with perhaps an inclination to one side, and can be produced by muscular action as well as by external force. However the most frequent causes are falls or blows on the side of the head or neck, either acting directly or by force transmitted along the column. A case often cited was reported by Fayer¹⁴ of a girl 6½

years old who was suddenly lifted by her head from a bench to a table and in consequence suffered a dislocation of the 6th and 7th vertebræ, with a probable fracture.

Prognosis. In unilateral dislocation the prognosis is much more favorable than in bilateral cases. The reports of more recent dates, when those cases with few symptoms are being recognized, show that the injury is not nearly so serious as formerly supposed. In 25 recent cases in the literature there has been no death. Ashurst however showed 9 deaths in his 29 cases, and numerous instances of death have been reported since his monograph. If death follows the injury it is usually within a week, but there are instances of long survival. Such was Reyburn's case, reduced 9 weeks after the accident, but this did not stop the progressive decline which ended two weeks later. Malgaigne¹⁵ gives particulars of 9 fatal cases of this dislocation and of 17 in which recovery took place. Death in the fatal cases did not take place as rapidly as might be expected, in one case the patient lived 40 days, another 101 days after the injury. Those dislocations above the origin of the phrenic nerve are the most fatal. While the symptoms may in any case be delayed, in no case should reduction be postponed, particularly in the progressive lesions where in cases of dangerous character and of increasing severity reduction has brought prompt relief.

Treatment. Dislocation from muscular action is usually reduced easily without an anesthetic. Spontaneous reduction is not uncommon. Blasius' boy who, after unsuccessful efforts on the part of the surgeon, later took the matter in his own hands and reduced the dislocation by standing against a wall and pressing backward against the neck, is often quoted. Walton states that of 7 cases, which have more recently come to his knowledge 2 have been reduced in sleep, 3 during preliminary anesthesia, and 2 by manipulation, and he mentions a case of Warren's spontaneously reduced by the patient's involuntary movements while cold water was being applied to the spine. It is more likely however that some manipulation will be necessary and I have found in two cases that the method suggested by Walton is sufficient. He states that in any attempt to separate the two vertebræ by extension, as was the most general practice, the vertebræ must be widely separated at every point in order that the dislocated articular process be elevated sufficiently to slip back in place, and it seems almost incredible to him that reduction was ever accomplished in this way, and it must be that abduction and rotation were added to extension. The method he proposes is a refinement of similar plans proposed by Richet and Hueter,¹⁶ discarding extension entirely. The anesthetized patient sits in a chair. The operator stands behind and using both hands grasps the head which is rocked without traction, for traction only lessens the effectiveness of the fulcrum on the sound side. Slight rotation to carry the dislocated process forward to free it, is first practiced. The head and neck are then tilted to the sound side and backward (that is if the patient with a left dislo-

cation is facing north the head is tilted southeast). This makes the dislocated articular facet rise above the facet below. The last motion is the rotation of the column backward into place, and the reduction is complete. The method is styled "retro-lateral flexion with rotation." The earliest reduction is desirable but there are several cases of late reduction, Mixter notes cases after six months and Keen after 4 months and 7 months. Thorburn⁷ in a series of 41 cases found reduction in 35. He relates a case of apparently successful reduction attended by a distinct snap in which autopsy 3 years later showed reduction was only apparent. Several instances of a recurrence of the dislocation are on record. The second case I have to report is of this nature.

W. H. A., aet 32, an instructor in gymnastics, was admitted to St. Luke's, July, 1904. He gave a history of having the pole break while pole vaulting four weeks before. He fell from mid air onto the right shoulder, head and back. He was unconscious for a short time, and on regaining his senses found his neck and head fixed. There were stinging pains in his elbows yet he was able to use both arms for all movements. Below the wrists there was a sensation as though his hands were asleep, particularly the tips of the fingers. There was some slight lessening of power in the right arm. During the interval before consulting Dr. Mudd, no attempt at reduction had been made, only hot applications applied to his neck. At this time Dr. Mudd reduced the dislocation under anesthesia by traction and rotation and put him in a plaster of Paris dressing. After a week he went home still in the plaster collar, which was cut and the neck inspected ten days after reduction and no deformity noted. He was not seen by me until two weeks after this last consultation with Dr. Mudd. Then in spite of the plaster collar he held his head tilted to the left, the face looking straight ahead. The head was held rigidly in this position, and any motion was painful. He did not recall the time when this position came on, in fact was not conscious of anything unusual in his neck. The arms showed no muscular or nerve disturbance except the persistence of tingling in the middle finger of the right hand. As the picture suggested a partial luxation, I took some x ray pictures which showed the right transverse process of the 6th vertebra riding upward upon, but not over, the facet of the 7th. The following day under an anesthetic the reduction was easily accomplished by Walton's method. A large Thomas paste board collar was put on and worn three weeks when it was discarded, with no recurrence of any trouble.

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SERUM DISEASE AS A CLINICAL MANIFESTATION OF ANAPHYLAXIS.

By E. W. SAUNDERS, M. D., of St. Louis.

Very soon after the discovery and general use of anti-diphtheritic serum, the profession became acquainted with a group of phenomena, following the hypodermatic injection of normal, antitoxic or bactericidal serum, to which the name serum disease is now applied. In general, these symptoms consisted of eruptions and joint pains occurring in a certain proportion of cases. Physicians regarded these symptoms as an uncomfortable, though harmless, after-effect in susceptible individuals, and attributed the rashes to some toxic substance in the horse's blood-serum. We were mistaken. The symptoms observed were only a few of the phenomena which attend a very severe internal disturbance, due to the introduction of heterologous proteids in the circulation. Recent clinical and experimental investigations have revealed the fact that remarkable changes take place in the organism injected with the serum, so that the disturbance has been dignified by a special name—Serum disease.

Although manifest symptoms do not occur in more than one-third of all cases, the cellular reaction to the alien serum is probably present in every individual who receives an injection, and the phenomena of anaphylaxis may be observed to a greater or less degree, if the proper tests are made.

In some of the cases injected, varying from 10 to 40 per cent, after a period of five to twenty days, the patient becomes restless, and may complain of lassitude and pain in the limbs. This is soon followed by the serum exanthem, which is often accompanied by severe itching and burning. The serum rash varies in character. Most often erythematous patches, rose red in color, will be found covering various parts of the body. Next in frequency are urticarial lesions. Sometimes the eruption is distinctly scarlatiniform. Occasionally it resembles measles. The eruption may be polymorphous, wheals, erythematous patches and macules, being observed on various parts of the body at the same time. Occasionally a typical erythema multiforme, or erythema-iris, with severe constitutional symptoms, occurs, especially after repeated injections of serum.

A very striking symptom is edema of the skin, which may be present only in certain circumscribed spots, or more rarely involve the whole integument, giving the person a ghastly, bloated appearance. A very serious form is the hemorrhagic type, in which hemorrhages occur in the skin. Fortunately this is rare.

The disturbance likewise is shown in the mucous membranes. Ery-

thematous spots may occur on the hard and soft palate. The fungiform papillæ of the tongue may be swollen, and give the tongue a raspberry appearance.

A very remarkable symptom, to which I drew attention about ten years ago, is dysmenorrhea in women. When a young woman receives a dose of diphtheria antitoxin within two weeks of her menstrual period, she is very likely to suffer severe pain, and an increase of flow at the subsequent catamenia.

Joint pains are frequently observed. One or more of the joints may become very tender to touch and to movement. Muscular pains are very common. Articular swelling may be present. The wrists, knees, hips, elbows, ankles and shoulder are most frequently implicated.

That the disease is a general disturbance is proven by the fact that an elevation of temperature is frequently present. The fever may be very high. Vomiting and diarrhea occur in a small proportion of cases.

In 1899, after repeated injections of diphtheria antitoxin in the babies of the Bethesda Foundlings' Home, I had the opportunity to observe in several cases the sensitizing effect of a previous injection. We found that many of the infants who had received an immunizing dose six weeks previously, showed a very marked supersensibility to the second injection. The symptoms of serum disease, which are usually delayed a week or more, came on within a few minutes, and with much greater violence. I reported these observations in the *St. Louis Courier of Medicine*, 1899. Although the explanation given then does not entirely harmonize with the present debated theories, the occurrence of a supersensibility and the clinical symptoms were clearly depicted.

The condition of anaphylaxis is sometimes remarkably protracted. Thus, in one instance, in a little girl who received an injection of anti-diphtheritic serum four years previously, another injection of the so-called globulin antitoxin produced violent symptoms in a few hours. In experimental anaphylaxis, Rosenan and Anderson found the condition persisting for several months. It is possible that this supersensitiveness may remain throughout life in certain individuals, and that it may be transmitted to offspring, as is the case in guinea-pigs.

The symptoms of this second reaction are very similar to those of the primary disease, but supervene very soon after the second injection, sometimes within a few minutes. There may be chill, convulsions and sudden high fever. The respiration becomes very rapid, the pulse accelerated, and the patient shows great anxiety. In some cases a severe dermatitis, with local pain around the site of the injection, appears. Bolton reported a case of local gangrene, a condition that frequently occurs in anaphylactic rabbits.

As far as I can learn, no cases of death have occurred in human beings by the repeated injections of horse serum, yet the severe symptoms which sometimes occur, and the fact that gangrene and death are so frequent in animals, convinces the clinician that antitonic horse serum is by no means a remedy which can be used carelessly or indiscriminately.

Another form of supersensitiveness occurs in certain individuals who have not had a previous injection of antitoxin. Quite a number of cases have been reported, and I have seen a number myself, in which the immediate serum reaction occurred, and yet the patient injected had never before had a dose of horse serum. No explanation can be offered for these cases at present except that of idiosyncrasy.

Finally, another form of supersensitiveness is found in those rare instances in which sudden death occurs after an immunizing or curative dose of diphtheria antitoxin in those injected for the first time. Patients suffering with asthma, Graves' disease and lymphatism, are most apt to show this fatal supersensitiveness. Quite a number of cases have lately been reported. The symptoms in these fatal cases, in general, resemble those of animals made supersensitive to serum, and receiving a fatal dose. Severe dyspnea, rapid respiration, cyanosis, intense edema of the skin, are the prominent symptoms. The patients die from respiratory paralysis. There can be little doubt that the anaphylaxis in these patients is similar to that produced in animals, although we are entirely ignorant of the cause, and have, unfortunately, no way of recognizing its presence until after the serum injection.

An important condition often incident to the serum disease is that the general bacterial or antitoxic resistance of the body is lowered during the height of the anaphylactic stage. Several cases of diphtheria have been reported with relapses in this period. We have observed cases of streptococcic infections, erysipelas, dysentery and chorea, improve under the serum injections, but rapidly become worse during the height of the serum disease. It may not be wise, therefore, to use an antitoxic or bactericidal serum, if its curative effect cannot be obtained before eight or ten days.

What has the experimental work on anaphylaxis taught us, which might aid us in the practical use of serum therapy?

In the first place, the effect on small animals, guinea-pigs and rabbits, seems somewhat different from that in human beings. In the former no effect is produced by the primary injection; in man, about one-fourth of all cases show clinical symptoms of serum disease, between the fifth and twentieth day. In animals, no primary supersensitiveness has been found, a condition not infrequent in man. The anaphylaxis in the latter, induced by an injection of horse serum, is less marked, since death in the human being must be very rare, after a second injection. The results obtained in animals cannot be applied to man without clinical support, yet it must be admitted that the "Arrthus" phenomenon—the induction of anaphylaxis after the hypodermatic or intravenous injection of any heterologous proteid—might be applicable to human beings also. All efforts to purify, or rather remove the objectionable properties of, antidiphtheritic serum by precipitation have proved futile. Experience has demonstrated that the globulin antitoxins are almost as certain

to cause rashes and joint pains and supersensitiveness as the whole serum.

Theobald Smith was the first to ascertain that guinea-pigs, who, for the purpose of standardizing serum, received hypodermatically a mixture of diphtheria toxin and antitoxin serum, after ten to fourteen days, were extremely susceptible to injections of horse serum. This has been called the Theobald Smith phenomenon, and is probably similar to the Arrthus phenomenon. It seems certain, however, that the antitoxin-toxin mixture heightens the anaphylaxis. A practical deduction from this is that it may be dangerous to inject another dose of serum in a patient suffering from diphtheria, who has received an insufficient dose of the curative serum six or eight days previously. Its use after fourteen or twenty days in threatened cardiac paralysis, as has been suggested by some French writers, must be considered irrational, if not absolutely dangerous.

It was Rosenan and Anderson who first pointed out that a small dose of serum sensitizes more quickly than a large dose, but, as Otto has so clearly shown, with a large dose of the serum, anaphylaxis is merely delayed. Whereas, in the case of small doses, anaphylaxis occurs in one week, with large doses it may be delayed a month. Bolton's cases illustrate this principle. In three children, who had received a large dose (4,000 to 15,000 units), a month to six weeks previously, the most violent symptoms occurred on a second injection. We may conclude, then, that in the ordinary clinical case, when 3,000 to 5,000 units are given, anaphylaxis is at its height three to five weeks after the initial injection. To give another dose at this period is sure to produce a more or less violent reaction. This period corresponds very closely with the cases we observed in the Bethesda Foundlings' Home, in which the violent symptoms were produced six weeks after the primary injection by another dose of diphtheria antitoxin.

It is extremely unlikely, then, that the acme of the serum disease corresponds with that of the supersensitive stage. Only when small prophylactic doses of antidiphtheritic serum are given, may we expect the serum disease and anaphylaxis to correspond in point of time.

Immunization against the toxic body, or antianaphylaxis, turns out to be no immunity, but only a temporary inhibitory effect by the presence of the alien serum. Animal experiments go to show that while the second injection may cause severe toxic symptoms, if the animal recovers, subsequent injections are less violent in their effects.

In animals, serum given by the mouth sensitizes in more than half the cases. This probably also occurs in man. For, as we observed several years ago, giving antitoxin by the mouth does not entirely prevent serum rashes.

All efforts to rid the curative sera of the toxic substance which sensitizes, have proven futile. Meule's observation that fresh sera have a greater tendency to cause rashes than older sera, has been refuted experimentally by Rosenan.

So far, all theories offered to explain this condition have not met all the known facts. Certainly the phenomena are somewhat different from those connected with antibodies in bacterial immunity. The older theory that the symptoms are explicable on the ground that precipitins are formed, does not meet the views of the later critics. The effort to explain anaphylaxis by means of the theories of Ehrlich, also meets extreme difficulties.

The following practical rules may be offered in the light of our present knowledge:

Curative sera are not the harmless substances we originally supposed.

Immunizing injections of serum should not be employed when isolation will prevent the disease with a reasonable degree of certainty and the children can be watched.

Serum should not be used in asthmatics, or those suffering from Graves' disease or the lymphatic constitution, except in developed diphtheria.

The use of bactericidal sera of doubtful value should not be encouraged, without careful consideration of all the possible bad effects from anaphylaxis.

If a second dose of serum must be given during the few weeks following a primary injection, small repeated doses are preferable to a large single dose.

On the other hand, one large *initial* dose is probably less harmful and far more effective than several small doses given over several days.

ARTHRITIS DEFORMANS IN CHILDREN.

By I. A. ABT, M. D., of Chicago.

No more appropriate introduction for a short treatment of this subject can be made than to quote the words of Garrod (20th Century Practice of Medicine, Vol. II.). He says: "The time is not yet ripe for any adequate description of arthritis deformans as it occurs in children, for the whole subject of the chronic joint diseases of children constitutes a chapter in clinical medicine which still remains to be written."

While the number of reported cases is not great, nevertheless isolated cases from various quarters, are being noted in the journals and year-books. As early as 1874, Cornil and Beau reported two cases. About the same time, Louis Smith of New York reported a case in which he observed recovery from the disease. Moncorvo, and later Johannessen, published elaborate monographs and case reports on the subject. All authors are agreed that in children more frequently than in adults, the disease begins as a subacute process.

The disease seems to occur in every climate, but more particularly in those regions where moisture and extreme cold are prevalent. These conditions favor not only the occurrence of the disease, but apparently also, the relapses. In reading the reports of the cases, one is struck by the fact that most of the children who fall ill with this disease belong to the poorest classes and live under the most unfavorable hygienic conditions.

G. F. Still, who has collected and reported a large number of cases, classifies arthritis deformans, or as he prefers to designate it, rheumatoid arthritis, into three varieties. The first variety in children differs in its clinical symptoms and its morbid anatomy from the same disease which is described in adults. This variety consists of a chronic, progressive enlargement of the joints, associated with enlargements of the lymphatic glands and spleen. The causes of this condition are unknown. Heredity seems to play no part in its causation; as has already been remarked, bad feeding and privations of various kinds were the most prominent factors. The disease usually begins before the second dentition, and it has been reported more frequently in girls than in boys. The onset of this variety is usually insidious, with stiffness of one or more joints. Occasionally the onset is sudden, marked by high fever, which may last for a variable time. Chills or rigors have been observed. The character of the joint enlargement is of importance. The bony irregularity of arthritis deformans is wanting, even when the disease is considerably advanced. In all of the cases which were observed by Still, the joint enlargement suggested rather a thickening of the tissues around

the joints than changes in the bony or cartilaginous tissues. Bony grating is, as a rule, not observed, and effusion is not a marked feature. Tenderness is only slightly present. The joints that are first involved are the knees, wrists, and cervical spines. The fingers, and later on the toes, become affected. The disease is probably never limited to one joint, and is almost always symmetrical. There is no tendency to supuration nor to bony ankylosis. There is usually muscular atrophy, with a tendency for the muscles to contract. The enlargement of the lymphatics in this variety of the disease, is a constant symptom. The glands most commonly affected are those which lie in proximity to the joints which are involved. The glands are hard and do not tend to break down. The spleen is always palpable, and its size is proportionate to the joint involvement and the number of glands involved. It is agreed among all those who have seen and reported these cases that endocardial inflammation does not occur, though pleuritis and pericarditis of a low grade, do occur. The progress of the disease is slow and in time tends to remain stationary, leaving the individual in a helpless condition, owing to the severity of the joint involvement. At times exophthalmus has been noted in connection with these cases, with a rapid pulse. A case of this variety of arthritis deformans has been reported by Lempke (*Chicago Medical Recorder*, September, 1902). It was my privilege to see this case, through the kindness of the reporter.

The little fellow, who was eleven years old, suffered mostly from involvement of the wrists and hands. The elbows and shoulders were involved, though the motion was fairly well preserved. The knee joints were much enlarged and slightly distended with fluid. The peripheral glands were nearly all enlarged, some to a very marked degree.

Herter (*New York Medical Journal*, April, 1898), considers that our knowledge of the etiology of this disease is still very limited. He believes that unquestionably certain important similarities exist between the lesions of arthritis deformans and those associated with the affections of the posterior nerve roots. The fact that there are muscular atrophies, that the skin is occasionally glossy, that the muscles are rigid in cases of arthritis deformans, seem to point, according to this observer, to the nervous origin.

But we are still much in the dark regarding the influence of lesions in the posterior ganglia or the posterior columns of the cord upon changes in the bones or joints. In some cases, the disease has appeared to follow closely upon shock.

Herter regards the condition as one in which there are marked nutritive changes acting in connection with some peculiar constitutional condition. He has found that the total acidity of the urine is increased, and that excessive putrefactive changes are present in the intestines of these individuals.

The second form of rheumatoid arthritis, or arthritis deformans, as it occurs in adults, is not frequent in children. Charcot and Weil have

described this form; Koplik described an interesting case; Manges has described a case; Osler, four cases, and Henoch, five cases. This form of arthritis deformans, or rheumatoid arthritis, as it is spoken of by the English writers, generally begins after the commencement of the second dentition. Its causation in children is as obscure as it is in adults; poverty and insanitary conditions were strikingly absent in some of the cases. The joint affection is multiple in contradistinction to the monoarticular arthritis of old age. The trouble is not confined to the smaller joints; in some the larger joints are affected first. The occurrence of Heberden's nodes is very rare in children. It has been observed by various students of this disease that the great toe of each foot becomes increased in length. Johannessen called attention to this, as did also Diamantberger and others.

Referring briefly to the course of this disease, most of the cases have been said to occur after exposure to wet and cold. The involvement of the joints becomes progressively worse; in a large number of the cases, ankylosis develops, and complete disability follows after a period of months. Pain is a very marked symptom and frequently interferes with the sleep. The joints of the upper as well as of the lower extremity, become involved, and after repeated attacks, ankylosis and limitation of motion results. The synovial membranes and the cartilage of the joints disappear. The ends of the bones assume ivory-like hardness and present osteophytic growths at their margins. Atrophy of the muscles follows closely upon the joint involvement. Koplik, referring to a case which he has described, says that when the disease has fully developed, the condition is pitiable. In his case, almost every joint in the body, including those of the cervical vertebrae, was involved. The temporo-maxillary articulations, shoulder, elbow, small finger joints, hip, knees, ankles, and toes were all affected. The patient slept in a semi-upright position, and had to be carried from place to place.

This form is distinguished from the first variety already referred to, by the absence of enlargements of the glands and spleen, by the presence of bony thickening and lipping about the joints, and in some cases by the presence of bony grating.

In speaking of the first variety of arthritis deformans, the theory of its nervous origin was alluded to. Nothing more is known concerning the etiology of the second variety. Two hypotheses as to its causation are considered. First, that the disease is caused by a lesion in the central nervous system which causes irregularity in bone growth and muscular atrophy. This theory is advanced by Charcot and Weil. The second is the infectious theory, though this is invoked to explain more particularly the cases of the first variety. The enlarged spleen, with hypertrophied glands and the daily variation of temperature, give some credence to this view.

The treatment which is advised in these cases is that the children should be placed upon iodide and, when possible, removed to a warmer climate. In any event, the conditions of hygiene should be improved.

The case report which follows, belongs to the second variety. The patient is a male child, 10 years of age, who came under observation in my service at the county hospital. There is no history of family or hereditary disease. He had whooping cough when a baby, and parents say that for some time he has been extremely irritable. One year ago, he was struck in the abdomen by a falling ladder; he thinks that abdominal pains, from which he suffers, are due to this accident. The patient's habits are good, save occasionally drinks a small quantity of beer.

The history of the present disease, as told by the father, is the following: About two years ago the father, who is an expressman, took the little fellow for a ride in an open wagon, while he was making one of his trips. The journey lasted longer than the father had anticipated, and they did not return home until late in the night. Before their return, the two were overtaken by a severe rain storm. The little fellow was drenched and remained exposed to the storm for two hours.

Two weeks subsequent to this drenching, he began to complain of pains in the abdomen; and at about the same time was seized with pains in the joints. These pains began first in the knees; later his wrists were involved in the same way. He had fever. The joints were painful, red and swollen; he slept poorly, was unable to bend his knees. His appetite was poor. He maintains that he was able to walk about some during the time that he was acutely ill.

The acute condition already referred to, lasted about six weeks; the enlargement of the joints increased. He is able, at present, to walk about, though there is stiffness in the knees, ankles and wrists. He complains occasionally of diarrhea and frequent disturbances of digestion.

Examination: The examination shows a poorly nourished, anemic boy. He is of a decidedly nervous temperament. He lies quietly in bed and is able to walk about, a slight stiffness at the knees causes him to assume a somewhat shuffling gait.

Respiration is normal. Pulse regular and of moderate tension. The skin is clear, no eruptions are observed.

Head: The head is quadrilateral, bosses over parietal and frontal eminences indicate a previous rickets. Face is pale, eyes and ears negative. There is a slight ulceration to be observed in the left angle of the mouth. Teeth: Lower canines and bicuspid have fallen out. The lower incisors are slightly notched. The mucous membrane of pharynx is hyperaemic, the tonsils are enlarged. The neck is negative. Chest: Lungs, negative. Heart: Apex beat is in the fourth interspace, about 1 c.c. inside of the nipple line; upper border is at the third rib, the right border at the right edge of the sternum. The second pulmonary sound is slightly accentuated. The aortic second sound is weak. The lower edge of the liver is palpable on deep inspiration.

Spleen is not palpable.

Extremities: Wrists, swollen. No redness nor tenderness. Extension, flexion, and lateral motion normal. Cannot close hands com-

pletely. Enlargement at wrist seems to be partly due to increase in size of bone, and perhaps a slight effusion. Second phalangeal joints of index and middle fingers of left hand slightly enlarged.

Knee swollen, 26 c.c. in circumference; considerable effusion into joints. Patella clicks present. Condyles of lower edge of femur are greatly enlarged, especially internal condyles. Upper end of tibia also enlarged. Flexion at knee is good, extension not complete. Ankles slightly swollen. Some limitation of motion.

Spine: Mobility normal. Hip: Normal. Slight creaking over affected joints. Glands: Inguinal and axillary glands are palpable.

DIFFERENTIAL DIAGNOSIS BETWEEN COMPLETE AND INCOMPLETE URETERO-VAGINAL FISTULA.

By ERNST JONAS, M. D., of St. Louis.

There is little doubt that, during the last decade, there has been a marked increase in the number of ureter-fistulæ after operations. The majority of these fistulæ have occurred after operations for cancer of the uterus. The reason for this is to be found in the effort to obtain better permanent results from operations for cancer of the uterus, after the investigations of Wertheim, Bumm and others had shown that most operations for cancer of the neck of the uterus until that time were more or less of a farce. It was justly insisted that, in all cases of cancer of the uterus, the infected parametrium and lymph glands must be removed with the cancer, just as the axillary fat and lymph glands are excised in all cases of cancer of the breast.

This new method permitted radical operation on cases which had heretofore been considered inoperable. It demanded removal of the infected parametrium and lymph glands in all cases, while until then, carcinomatous infiltration of the parametrium and palpable lymph glands were considered beyond aid. It is only natural that in the attempt to dissect the ureter out of the infiltrated parametrium, the nutrition of the ureter should suffer and a ureter-fistula perhaps follow. The lesson had to be learned that, in order to avoid these very disagreeable fistulæ, it is absolutely essential that the ureter be handled with utmost care during the whole operation. No pulling, no pressing with instruments is permissible. The best way to avoid injuring the ureter is to keep it in view at all stages of the operation. It is one thing, however, to keep the ureter plainly in sight, and another to lift it out of its bed for greater distances. If this lifting is not avoided, then necrosis of the ureter and a ureterovaginal fistula results, or even urinary infiltration and peritonitis. It is hardly necessary to mention that infections or drains introduced extra-peritoneally into the neighborhood of the ureter are also favorable to the development of a ureterovaginal fistula.

Less frequently ureterovaginal fistulæ follow operations for fibroids of the uterus. There is undoubtedly a justified tendency among surgeons to prefer panhysterectomy for fibroids of the uterus to supra-vaginal amputation. (Conservatism in large fibroid operations is not often indicated, because of the usual multiplicity of the fibroids; it is almost inevitable that small nuclei remain, which frequently grow then with rather increased activity. However, the wish of the patient not to be deprived of the menstrual habitus and of the possibility of bearing children, might induce the operator to save the uterus. But pregnancy after removal of fibroids of the size of a child's head, or larger, is rare,

and the danger of pregnancy and confinement in a uterus badly scarred in several places is to be considered.)

The development of a ureterovaginal fistula after panhysterectomy for fibroid of the uterus is, as before stated, infrequent. There are cases, however, in which such a condition might occur without any apparent reason. The case in which I made my observations of importance for the differential diagnosis of complete and incomplete ureterovaginal fistula developed the fistula after panhysterectomy performed for fibroid of the uterus.

Mrs. T——, extremely exhausted and highly anemic, presented herself with a firm round tumor, reaching up to the middle between the umbilicus and the xiphoid process, in size about equal to the uterus in the eighth month of pregnancy. The tumor could be felt dipping down into the pelvis, particularly so on the left side. The body of the uterus could not be outlined, the neck having entirely disappeared. There was a very low hemoglobin percentage (40 per cent.), otherwise the examination of the organs proved satisfactory.

I performed panhysterectomy with removal of tubes and ovaries in the typical way, keeping very close to the tumor and uterus. In this way, as is well known, injury to the bladder, ureter and rectum is surely and simply avoided. In this particular, myoma operations differ from carcinoma operations, in which, on the contrary, we must keep far away from the uterus and must sacrifice a good part of the vagina. The operation was simple, and even on the left side of the pelvis, where the tumor dipped far down between rectum and vagina, it was not necessary to raise the ureter from its bed and to injure the ureterovaginal vascular network, the result of which is a frequent cause for necrosis of the ureter. After complete stoppage of the hemorrhage, I introduced a small gauze drain into the vagina, and sewed the peritoneum of the bladder to the peritoneum of the Douglas pouch, and then sewed the rest of the peritoneum in the usual linear manner. As a rule, I first sew the peritoneum of the bladder to the anterior vaginal wall, and the peritoneum of the Douglas pouch to the posterior wall of the vagina, and then continue as above. In this case, on account of the highly anemic condition of the patient before the operation, I did not wish to prolong the work even for the very short time required for this additional sewing. I removed the drain on the third day.

Everything went favorably until the tenth day after the operation, when the nurse reported that the patient, who had been able to pass her urine normally, was continually wet, though from time to time urine was passed in the natural way. The quantity of the normally passed urine, which had averaged fifty ounces in twenty-four hours, dropped to twenty-five to thirty ounces. Upon vaginal examination, I found a constant dripping of urine from the vagina. I could not, however, discover the location of a fistula. I wish to state here that the discovery of a fistula in the left or right fornix is by no means a proof that the ureter

of the same side is injured, since the injured ureter might be pulled entirely to the opposite side by parametrian scar formation. The complete filling of the bladder with permanganate solution showed that there was no incontinence of the bladder. There was no doubt, therefore, that a ureterovaginal fistula existed. In order to find the ureteral orifices in the bladder more easily, I injected 4 ccm. of a 4 per cent. solution of indigocarmine (Brückner, Lampe & Co.) into the gluteal region, according to the advice of Völker and Joseph. Cystoscopic examination about twenty minutes after this injection revealed the right ureteral opening very plainly by a greenish-bluish discharge. The left ureteral opening could not at first be discovered, but then I recognized a movement of the ureter similar to the contraction of the ureter in discharging urine. But no fluid came from the opening! This symptom, fittingly called by Viertel "Leergehen" of the ureter, was very evident. Its presence, depending upon contraction of the ureter, proved that the peristaltic movement of the ureter continued to the bladder, and that, therefore, there was no complete interruption of the continuity of the ureter, but only an opening in the wall.

This phenomenon, in cases of evident ureterovaginal fistula after operation, decides with which of the two conditions we have to deal. The differential diagnosis is of importance, since we know that lateral defects of the ureter frequently, even usually, heal of their own accord in about four to six weeks. (The wound of the ureter, after removal of a stone, usually heals spontaneously.) Complete severing of the ureter, as is produced by section or ligation, never heals spontaneously. In the case under consideration there was no marked decrease of urine from the vagina for about two weeks after the development of the fistula, that is, three and a half weeks from the date of the operation. I explained to the patient the exact nature of her condition, and told her that I trusted the fistula would be a temporary one and would probably close in from two to four weeks. The patient, feeling otherwise well, decided to return home, and two weeks later reported that the quantity of urine coming from the vagina was decidedly less, the amount passed from the bladder increasing. One week later she wrote that no urine escaped from the vagina and that she passed between fifty and sixty ounces of urine.

The differential diagnosis between a complete and incomplete ureterovaginal fistula is, therefore, by no means only of academic value. It is of great practical import, since it decides for or against operation. In incomplete ureterovaginal fistula it should warn against premature operative interference. Except in such cases in which there is a certainty of complete interruption of the continuity and in which, therefore, spontaneous healing is impossible—only after nature has had her chance of at least six weeks, should we interfere and perform a secondary operation, reimplantation of the ureter into the bladder, ureteral anastomosis, or even nephrectomy.

I examined the patient again, one year after the operation, and con-

vinced myself that she was absolutely well. Both ureters discharged urine into the bladder; the ureteral catheter entered the left ureter without difficulty. The condition of the pelvis is perfect, not a trace of an exudate being noticeable. I am not in a position to state the exact cause for this ureterovaginal fistula. It did not appear until the tenth day. At the operation, as stated before, I carefully avoided disturbing the ureter in its nourishment. However, a slight mechanical insult to the ureter cannot be excluded. This, in a patient so extremely anemic, may have caused the fistula through secondary necrosis.

To summarize:

1. Leergehen (empty contraction) of the ureter is an important point for differential diagnosis between a lateral opening and complete interruption of the continuity of the ureter in ureterovaginal fistula.
2. Operative interference in ureterovaginal fistula, where there is only a lateral opening in the ureteral wall, is not advisable until there has been a chance for spontaneous healing.

PUERPERAL FEVER.*

By DR. ERNST RUNGE, of Berlin.

Febrile processes occurring during the puerperal state, and arising as a result of that condition, may be divided into two groups: wound intoxication and wound infection.

Wound intoxication, *i. e.*, a sapremic fever, is caused by various bacteria, saprophytes, the large majority of which are strict anaërobes and live only on dead tissue. Toxines produced by them are transported into the general system by way of the blood and lymph current and lead to a rise of temperature; the bacteria themselves remain localized. Remnants of placental tissue, fragments of the ovisac and blood clots, rarely normal lochial secretion, furnish the suitable medium for their growth. If the lochial discharge cannot escape and is retained in the uterus, symptoms will develop which clinically and bacteriologically are identical with those of wound intoxication. (Stauungsfieber). In these cases the fever, as a rule, appears late in the puerperium. The lochia have a bad odor and very often become sanguinous.

If the condition is treated properly the prognosis almost always is favorable. The fragments of tissue remaining in the uterus must be removed carefully but thoroughly, with the finger, if possible, the uterine cavity flushed with 1 per cent. solution of lysol, or 50 per cent. alcohol, or 3 per cent. solution of aluminium acetate or hydrogen peroxide. In cases of retention of the lochia or of membranes, the intrauterine douche alone often proves sufficient. On account of the danger of intoxication, bichloride solutions must be avoided for this purpose. The further treatment consists in the application of an icebag and the administrations of ergot. In cases of simple retention of the lochial secretion, or if the putrid process is limited to the surface of the endometrium, the temperature will fall promptly. If the process has invaded the endometrium to some depth, the return of the temperature to normal may take several days. A new rise of temperature would call for another intrauterine douche.

The prognosis *quoad vitam* is also favorable, if the fever is due to a gonorrheal infection, usually manifesting itself at about the eighth day. Exudates may form, the uterine appendages may become affected, etc., but fatal general peritonitis must not be feared. Proper treatment in these cases will consist in absolute rest in bed, ice bag on abdomen and administration of ergot. Enforced absolute rest will tend, more than anything else, to reduce the time required for complete recovery.

The other group of febrile processes during the puerperium, wound infection, are caused by streptococci.

*Translated from Berliner klinische Wochenschrift, 16. Maerz, 1908.

The identification of the responsible bacterium in the individual case is simple. With the help of two retractors the cervix is brought into plain view. A thin sterile glass tube is pushed into the uterus and some of the discharge aspirated into the tube. The differential diagnosis often can be made quickly in the stained smear. Since it may be important in certain instances to determine whether the infection has transgressed the boundaries of the uterus, Fromme¹ suggests the bacteriologic examination of the blood. If the blood is found free of bacteria, it can be assumed that the process still is limited to the interior of the uterus and the prognosis in general is good. The presence of streptococci in the blood proves the systemic infection and obviously makes the prognosis decidedly less favorable.

Thus it can be deduced that the infection may remain limited to the port of ingress, or that the infection may invade the system, causing sepsis, pyemia, etc.

In cases of local infection we deal, as a rule, with injuries to the perineum, vagina or cervix. But there also exists a streptococcus-endometritis. The wound surface is covered with a whitish-gray membrane; the temperature is above normal; at times the patient has chills. The diagnosis is easily made after a careful inspection of vagina and cervix. In order to establish the diagnosis of streptococcus-endometritis a bacteriologic examination of the uterine discharge must be added. In all these cases the prognosis is rather serious since the possibility of a general infection never can be excluded. Nevertheless proper treatment in the majority of cases will result in recovery. The removal of the grayish cover from the wounds with a curette is always contraindicated. Dusting powders and tincture of iodine must be freely applied. In cases of endometritis, copious (3 to 4 quarts) antiseptic intrauterine douches are used with advantage. The icebag is kept on abdomen and ergot prescribed.

Decidedly more serious becomes the situation as soon as the streptococci invade the general system. Two modes of general infection must be differentiated: (1) by way of the bloodvessels, causing thrombophlebitis, pyemia and septicemia; and (2) by way of the lymphatic system, resulting in metritis dissecans, puerperal parametritis and perimetritis or peritonitis (sepsis).

In speaking of the first group it must be stated that the avenue for the spreading of the infection is opened through the veins and never through arteries. The bacteria enter the veins, as a rule, at the side of the former insertion of the placenta. First a phlebitis is set up in the pelvic veins, followed by a thrombophlebitis. If suppuration does not occur, the disease may take a favorable course. With a gradual increase in temperature and pulse rate pain and edema appear in the region of the thigh. There is tenderness to pressure, especially in the fossa ovalis, and gradually the typical picture of the *phlegmasia alba dolens* develops. In some instances, also, the external genitalia are edematous. The

treatment consists in complete rest, with the affected leg in a slightly elevated position. The extremity is covered with a Priessnitz compress and the systemic infection is treated in the manner, considered later in detail.

If, on the other hand, the thrombi putrify, the clinical picture is that of a pyemia. After a slight rise of temperature at the end of the first or during the second week, chills occur, the temperature rapidly rising up to and even over 40° C. With profuse perspiration, a few hours later, the temperature falls, but the pulse rate remains comparatively high. There are more chills in the next few days, each indicating a new invasion of bacteria from the putrifying thrombi. Between chills the patient feels comparatively well. In the meantime abscesses may develop in the lungs, kidneys, muscles, skin or joints. Robust persons may remain for several weeks in a satisfactory general condition. Gradually, however, they will begin to fail, and by far the larger number of puerperæ will succumb to the infection. The only possible help lies in an attempt to combat the systemic infection.

Very similar is the clinical picture of a septicemia, only there are no chills. The temperature ranges between 39° and 40° C. Incessantly new streptococci flood into the system from the infected endometrium. The sensorium becomes clouded and usually death ensues a week or two later.

In cases in which the infection progresses by way of the lymph channels, the process still may remain limited to the uterus itself. Small abscesses form, which may lead to the elimination of small portion of the muscular wall, metritis dissecans. Antiseptic douches are employed besides a general therapy and eventually the extirpation of the uterus may become necessary.

In other cases the infection spreads into the surrounding connective tissue, causing puerperal parametritis and perimetritis, and finally a pelvic phlegmon. To both sides of the uterus a soft, doughy, very tender, resistance is palpable which soon transforms into a hard exudate. The exudate can be resorbed, in which event the temperature sinks to normal, or softens through the formation of pus. The pus may perforate into bladder, vagina, rectum or through the anterior abdominal wall, again accompanied by a fall in the temperature. The therapy consists in general treatment of the systemic infection, application of the icebag and antiseptic douches. Whenever an abscess forms, it should be opened by an incision either through vagina or abdominal wall.

The most unfavorable result of a lymphogenic streptococcus infection is a puerperal septic peritonitis, which almost always ends fatally. As a rule this disease begins between the second and fourth day post partum. With a chill, temperature and pulse rate suddenly rise, the tongue feels dry, the abdomen becomes meteoristic. With further rise of the temperature the meteorism increases, the abdomen is very tender to pressure, respiration becomes superficial and the patient begins to vomit. A few days later the sensorium is impaired, the radial pulse is

thin and extremely fast and soon exitus occurs. All local measures will prove useless, only in rare instances a therapy against the systemic infection may finally save the patient's life.

It is obvious that in practice the strict classification of every case into one of the groups described above will be impossible. Forms which represent the transition from one of these groups into another are common, infection and intoxication may manifest themselves simultaneously, etc. But as a rule, careful observation will permit definite conclusions concerning the diagnosis, prognosis and therapy in the individual case.

Finally we shall speak of the general treatment of the systemic infection. It never is justifiable to fight the fever with antipyretics, since fever must be regarded as one factor of importance in the cure. If in cases of heart failure a reduction of the temperature would seem desirable, cold sponging (for ten minutes) will prove more advantageous. Narcotics, especially morphine (subcutaneously or in suppositories) can be used to relieve pain. A strengthening diet, to which alcohol is added, must be prescribed. In order to stimulate renal function and to propagate the elimination of toxic material the patient is given large quantities of water. For the same purpose rectal or hypodermic injection of saline solution can be employed.

In more recent years two new methods of combating the general infection in puerperal fever have been successfully exploited, *i. e.*, the administration of antitoxic sera, and operations undertaken in an attempt to eliminate the primary source of infection.

Antistreptococcus sera have been prepared by Marmorek, Aronson, Menzer, Paltauf and others. Opinions concerning the results obtained with these sera vary widely. Bumm² believes that none of them shows a distinct clinical effect in a general infection with the streptococcus. They may prove very efficient, however, whenever the infection is still limited to the endometrium. The sooner the serum is injected the better is the prospect of a satisfactory effect. The serum of Aronson has been pronounced valueless by Zangenmeister³ but has proved very valuable in the hands of Eggel.⁴ Satisfactory results have been obtained by Burckhard⁵ and Falkner⁶ with the serum of Paltauf, by Schultze,⁷ Peham,⁸ Bewersdorf,⁹ Martin¹⁰ and Menzer¹¹ with the serum prepared by the latter, by Pilzer and Eberson¹² with the Marmorek serum, by Knyvett Gordon,¹³ Murtry¹⁴ and Raw¹⁵ with the antistreptococcic serum of the Wellcome Laboratory, and finally by Fromme¹ with the serum of the Hoechst Farbwerke. It can be easily seen that a final judgment concerning antistreptococcic sera can not as yet be passed, but it seems that serious types of a general infection are not, as a rule, benefited, while satisfactory results are occasionally seen in cases of localized infection.

Of late it has been suggested, *e. g.* by Polano,¹⁶ to actively immunize parturient women by means of injection of dead cultures of pathogenic streptococci whenever a major obstetric operation is contemplated. Zangemeister¹⁷ endeavors to obtain a passive immunization for the same

purpose by the injection of blood serum taken from patients recovering from a streptococcus infection. Also Bumm² is in favor of the prophylactic use of antistreptococcus serum.

In some cases of streptococcus infection, especially in pyemic processes, an effect can be expected from silver salts, principally from collargol of Crédé. It can be employed in form of a salve as inunction, or in solution per rectum, also in intravenous injection (5 ccm. of a 5 per cent. solution, once a day, for two or three days). Intravenous injections are best made into the cubital vein, and they alone seem to yield entirely satisfactory results. The manner in which the introduced silver exerts its deleterious effect upon the streptococci has not yet been explained. Some writers think that after the resorption of the collargol into the blood has been effected, certain silver salts are deposited in the areas of inflammation and there destroy the bacteria. Wassmuth,¹⁸ like Schade, assumes that it is the electro-catalytic action of colloid metals which causes a rapid oxidation of the tissues. This process leads to a destruction of ptomains circulating in the blood and thus to a speedy improvement of the general condition of the patient. Good results with this method have been recorded by Bonnaire,¹⁹ Opitz,²⁰ Rosthorn,²¹ Wassmuth,¹⁸ Weissmann,²² Osterloh,²³ Buber¹²⁴ and Hocheisen.²⁵ Fromme²⁶ is not absolutely opposed to the intravenous administration of collargol but considers the ligation of veins, to be considered presently, preferable.

More promising seems a newer idea. It has been observed that a marked hyperleucocytosis can be produced, and thus the resistance of the body, especially of the peritoneum, against streptococci noticeably increased by the introduction of nucleo-proteid substances. Hannes²⁷ recommends the prophylactic injection of 50 cm. of a 2 per cent. solution of nucleic acid preceding all major operations, and proves the advantages of this method by results obtained in a large series of operations for carcinoma. Pollak²⁸ also favors this idea. For the same purpose Raymond, Petit, Barlerin and Demelin²⁹ produce a hyperleucocytosis by means of injections of horse serum. Obviously this question is still far from being finally settled and only further observations will establish the possible value of this method.

Essentially different are the attempts of other authors to combat the streptococcus infection by an operation, its purpose being the elimination of the primary source of infection. Thus some authors, among them W. A. Freund,³⁰ advised the extirpation of the infected uterus. Favorable results obtained with this method have been reported by Kunith,³¹ Lemoine,³² Vertes,³³ Wagner,³⁴ Sourdille³⁵ and others. The main difficulty of this mode of procedure lies in the exact determination of the moment when operation becomes permissible and the realization of the period when this operation has become contraindicated. Latzko³⁶ reports unsatisfactory results, and Bumm³⁷ objects to hysterectomy in cases of chronic pyemia, because a comparatively healthy organ is re-

moved, a large wound cavity produced and the duration of operation lengthened, while the same effect could be obtained by simply ligating the veins. In cases of acute pyemia, on the other hand, the operation is likely to result fatally because the blood and lymphvessels, opened during the operation, as a rule, will contain virulent germs.

More promising seems another of the newer ideas, namely to prevent the infected thrombi in the veins from being carried away. In this manner the continual dissemination of a great number of virulent bacteria into the circulating blood is obviated. Trendelenburg³⁸ was the first to suggest and to execute such an operation, which later was further developed and propagated especially by Bumm.³⁷ We possess reports of such operations from Sippel, Lenhartz,³⁹ Opitz,⁴⁰ Friedemann,⁴¹ Breff-Sheffield,⁴² Haeckel,⁴³ Seitz,⁴⁴ Cuff,⁴⁵ Foix,⁴⁶ Fromme,²⁶ Veit⁴⁷ and others.

In Bumm's opinion the cases of chronic pyemia are better adapted than those of acute pyemia. Fromme, however, obtained a perfect result in a case of acute pyemia. Extremely difficult in the individual case is the decision whether this operation is indicated or not, and this difficulty explains the records of failures. At the present time exact rules have not as yet been evolved as to the exact moment when ligation is indicated. We do not know how far the infection has progressed in the veins, and whether the thrombosis possibly has already reached the vena cava. Bumm, therefore, demands that this operation be limited to cases in which it can be positively established, if necessary under anesthesia, that the infection originates in the pelvic veins. On one or both sides of the uterus a hard mass can be palpated, the thrombosed veins being surrounded by infiltrated tissue. Bardeleben⁴⁸ is fully in accord with Bumm, and in another paper describes the histologic findings made in such thrombosed veins in cases of pyemia.⁴⁹

The operation itself may be briefly described as follows: An extra-peritoneal incision is made in the lumbar region, or a transperitoneal in the median line. The broad ligament is split open, the thrombosed veins dissected out, ligated in two places and excised. Seitz⁴⁴ and Lendon,⁵⁰ tied, with perfect success, only the spermatic veins, Bumm,³⁷ in the cases already quoted, both hypogastric veins. He suggests the ligation of both hypogastrics, but to excise only a diseased spermatic vein. Of late Friedemann, Bardeleben,⁴⁸ Fromme,⁵¹ Kroemer⁵² and Veit,⁴⁷ have recommended the ligation of all four veins in every case.

In this connection a very careful anatomic study of all pelvic veins by Kownatzky⁵³ must be mentioned.

The results of this new operation are not uniform. Bumm saved three out of five patients, Lenhartz one out of eight, Haeckel one of two. The results will, however, become better in the near future when we shall have learned to recognize the cases specially fit for this operation and the proper time for its execution. In all patients who have recovered, the temperature promptly began to fall one or two days after the opera-

tion; the chills disappeared, or occasionally there was one or another within the next day or two, but then convalescence progressed speedily. In order to avoid the dangers of a laparotomy Latzko³⁶ has suggested to proceed through the vagina by opening the lateral fornix, dissecting out the diseased veins, ligating and excising them. The final judgment has not as yet been passed concerning these various operative methods of combating a streptococcus infection in the puerperal state.

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BICHAT:
HIS LIFE, RESEARCHES AND CHARACTER.

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Marie François Xavier Bichat, better known as Bichat, was born November 14th, 1771, in Thoirette, France. His father and mother were first cousins. Of his mother, little has been written, but enough to know that she was a noble woman and that she profoundly influenced her boy's career. His father was a physician of prominence in Poncin, and a member of the faculty of the University of Montpellier. In easy circumstances, he practiced medicine for the most part gratuitously. One of Bichat's uncles was a rich merchant of Lyons. Another was a Jesuit father, who was the Superior of the Seminary of Saint Yrénée and one of the teachers of Louis XVI.

His father early laid a most excellent foundation for the later career of his son by helping him at the age of eight, to comprehend the anatomy of the cat. Often he went with his father in making calls through the mountains of the Jura, where he gathered and came to know many rare plants. His academic training was in his uncle's school at Lyons, and in the seminary at Nantua. In these schools he not only became fond of physics and natural history, but also achieved distinction in philosophy, and received a number of prizes in rhetoric.

In 1791, at the age of twenty, he began the study of anatomy in the Hôtel Dieu of Lyons, under the renowned Marc Antoine Petit, who soon recognized his ability and made him his assistant. Although Bichat studied hard, the times were not conducive to persistent work and careful thinking. The dark clouds of the revolution were gathering. In 1793, Lyons was besieged. At this time young Bichat was in the military service. After the siege, he and his brother returned to the home of their parents, who were the objects of scorn by the Sans-Culottes. The boys, in order to relieve their parents from further humiliation, were obliged to enroll, one in an ambulance corps, the other in a battalion of volunteers. At the moment of organization, the brothers were not present, and were sought for with much clamor, even their parents were seriously menaced. When found, they were so exasperated by one of the sergeants that Xavier made a straight for him and struck him. The sergeant attempted to kill Xavier, but he fought like a tiger, and was victorious. The commander, a friend of the family, saw the danger and brought about a reconciliation. Bichat realized the seriousness of the affair, fled from Lyons to Paris, where he resumed his medical work under the great Desault, then the most famous surgeon in France, with the intention of returning to the military service. But when the

9th of Thermidor, 1794, saw the fall of that tyrant, who had sought to annihilate free thought, speech and action. When the torn and breathless people came from hiding places and absent ones returned to their homes, the dawning of a brighter day came, and Bichat found his desire waning to become a military surgeon.

About this time an incident occurred which was of momentous importance to Bichat. Buisson tells us that it was the custom of Desault



MARIE FRANÇOIS XAVIER BICHAT.

to select a certain pupil to give a resumé of the work of the preceding day. One day Desault had delivered a long discourse on the fractures of the clavicle and the methods of bandaging. The student who was to give the resumé was absent, and Bichat was asked to give the demonstration. The purity of his diction, the exactness of his method and the precision of his work, caused a remarkable sensation. He was listened

to with silence, and at the close received great applause from his fellow students. When Manoury, the surgeon in charge, told Desault, the latter sent for Bichat, took him to his home, and thenceforth treated him as his son.

For nearly two years he accompanied his master over France in consultation work, and during this time, with Corvisart and others, he founded the Société Médicale d'Emulation, before which he read a number of brief papers. In 1795, Desault died leaving a widow and young son, both of whom would have been destitute but for the support which Bichat gladly gave them. Undismayed by the loss of his master, he doubled his energy, and notwithstanding his large practice, he finished and published the fourth volume of Desault's Journal of Surgery. Moreover, he never failed to spend a certain part of each day in physiological experimentation, dissection, and operative work on the cadaver.

Desault's death caused Bichat to lose interest in surgery, and he thenceforth gave more of his time to the study of anatomy. In the winter of 1797, he gave his first course in anatomy and operative surgery in rooms which he secured at 18 rue des Carmes. In his lectures, he added remarks on the physiology of the various structures and gave illustrative experiments. He always emphasized the fact that physiology is the inseparable companion of anatomy. The structure of an organ is only of interest when coupled with its function. During this time he wrote several articles on surgical methods; a memoir on the synovial membranes; one on membranes and their general relation to organization; and another on the relation existing between the organs in symmetrical and irregular forms. The evenings were largely devoted to editing the surgical works of Desault, which had been left in scattered fragments. The following year, in addition to his courses in anatomy and surgery, he added a third in physiology. In the place of lecturing on the probable functions of organs, as was commonly done, he turned to animal experimentation, following the example of Spallanzani of Italy. He often lectured three times in one day, and directed the practical work of nearly eighty students. In addition to this work, he carried on a general practice. The time left he devoted to writing. In these ceaseless labors, he was interrupted by a serious attack of hæmoptysis, from which, however, he shortly recovered.

In 1798, Pinel, the most celebrated physician of the day, published a great work entitled, "*Nosographie Philosophique*." The ideas embodied in this work opened the way for a new system of medicine. Pinel taught that disease must be caused by a structural change in the organs or tissues. Accordingly, these organs or tissues should be studied first, from the standpoint of structure, then of function. Then the exterior signs of the disease should be studied in relation to altered structure. This being done, diseases should be classified from the similarity or dissimilarity of the tissues affected.

Bichat was deeply impressed by this work and became particularly interested in the distinction which Pinel had made between the mucous

and serous membranes. He at once began to work on the membranes, and two years later published his "Treatise on Membranes in General and Diverse Membranes in Particular." In this work, Bichat divided the internal membranes into the simple, which comprise the mucous, serous and fibrous, and the composite, including the sero-mucous, the fibro-mucous, and the fibro-serous. This work was a model of precision, originality and analytical method. It won for Bichat all the titles and privileges of the *Ecole de Médecine*. During the same year he wrote two minor papers, one on the arachnoid and the other on synovial membranes. The latter was severely criticised by Richerand.

In the closing year of the 18th century, his "Physiological Researches on Life and Death," appeared. Its first line runs as follows: "Life is the ensemble of functions which resist death." Bichat, in general, agreed with Stahl that the mechanical and chemical forces are in opposition to the vital forces. Yet, he did not agree with Stahl that the vital forces act with intelligence for the conservation of the organization. It should be remembered that Barthez and Bordeu, two of the most celebrated philosophers of the day, believed that they had shown that there is in man a vital force, operating independent of the laws of chemistry and physics. Bichat points out that physical properties are inherent in matter and are never lost. While the essence of the vital properties is to give life to matter for a certain time, which may be called the life cycle. Bichat cites the fable of Prometheus, who, having formed several statues of men, stole fire from the sky to animate them. This fire would be the emblem of the vital force, while it burns, life is sustained; when it goes out death ensues. "Matter has possessed physical properties through all time. They were inherent in matter from creation and will leave it only when the world ceases to exist. In the space of time between these two epochs, which is only measured by infinity, matter has been penetrated at intervals by vital properties, and the physical and vital thus brought into union. Thus, we see that physical properties reside in matter constantly, but the vital only intermittently."

Another essential difference between the physical and vital properties of matter is pointed out by Bichat. He says: "All inert bodies possess no communication between parts, e. g., a part of a stone or the end of a piece of metal may be altered in any manner whatever by mechanical action or chemical dissolution; the other parts are not affected; in order to alter them, they must be acted upon directly. In the living body, on the contrary, the vital properties of no structure can be disturbed without others being affected as well. All physicians have known the singular sympathy which exists among all the organs, both in the state of health and disease, but principally in the latter. How easy it would be to study and comprehend diseases, if the various structures were deprived of all sympathy."

Bichat attempts to show the evolution of the vital properties, although he does not attempt to explain their origin. He says: "If we examine

the immense series of living bodies, we shall see the vital properties gradually augmenting in number and energy, from the lowest of plants to the highest of animals. The lowest plants show insensible contractility and organic sensibility. The lowest animals begin to add sensible organic contractility to these properties, and afterward animal sensibility and contractility."

"Insensible contractility and organic sensibility comprise all the phenomena of capillary circulation of secretion, absorption, exhalation, nutrition, etc. In the state of disease, all the phenomena that involve a disorder in these functions are clearly derived from an injury of these properties, such as inflammation, formation of pus, induration, resolution, hemorrhage, unnatural increase or suppression of secretions, increased exhalation, as in dropsies, diminished or wholly wanting, as in adhesions, absorptions, absorption disturbed in one way or another; nutrition altered more or less, or presenting unnatural phenomena, as in the formation of tumors, cysts, cicatrices, etc.

Sensible organic contractility governs, especially in the state of health, the movements necessary in digestion, and those of circulation; at least through the great vessels which carry the red and black blood of the general system, also the movements in the excretion of urine, etc. In the state of diseases, all the phenomena of vomiting, of diarrhoea, and a great many of those of the pulse, eventually result in disorder of the sensible contractility.

Animal sensibility governs all the external sensations, those of seeing, hearing, smelling, tasting and feeling, and the internal, as hunger, thirst, etc. Pain and its innumerable modifications, itching, smarting, tickling, the sensations of heaviness, lassitude, throbbing, pricking, pulling, are not these only different alterations of animal sensibility?

Animal contractility governs locomotion, the voice, etc.; convulsions, spasms, palsies, etc., are derived from an augmentation or diminution of this property."

Whether his physiology be sound or unsound, the fact remains that it led him to develop the grand idea of sympathy of parts, and the still greater doctrine of vital unity. Having once adopted this view of life and death, he was of necessity led to search most carefully all parts of the body to find out, not only in what structure disease originated, but also to what extent other structures were involved. In addition to defining his philosophical attitude, he recorded a number of physiological discoveries. He pointed out that death always begins in the heart, the lungs, or in the brain, and endeavored to determine the successive steps through which life withdraws from the various organs. He pointed out the influence of red blood on the life of the brain. The action of dark blood upon various functions, especially important for a later understanding of asphyxia. The action of the vagus nerve, also the functional interdependence of brain and heart.

Having spoken of some of the ideas recorded in his physiological work, let us next briefly consider his General Anatomy. The opening words

of his general anatomy run as follows: "There are in nature two classes of beings, two classes of properties, and two classes of sciences. The beings are organic or inorganic. The properties, vital or non-vital, and the sciences, physiological or physical. The animals and vegetables are organic; the minerals, inorganic; sensibility and contractility are vital properties; gravity, affinity, elasticity, etc., are non-vital properties."

"All animals are an assemblage of different organs which, executing each a special function, concur in their own manner to the preservation of the whole.} Like several separate machines that make up a general one comparable to the individual. These separate machines in turn are made up of many textures of different kinds, which really compose the elements of these organs. Chemistry has its simple bodies, which form by various combinations, the compound bodies. In the same way anatomy has its simple textures, which by their combinations, make up the organs.] These tissues are (1) the cellular; (2) the nervous of the animal life; (3) the nervous of the organic life; (4) the arterial; (5) the venous; (6) the exhalant; (7) the absorbent and their glands; (8) the osseous; (9) the medullary; (10) the cartilaginous; (11) the fibrous; (12) the fibro-cartilaginous; (13) the muscular of the animal life; (14) the muscular of the organic life; (15) the mucous; (17) the synovial; (18) the glandular; (19) the dermoid; (20) the epidermoid; (21) the pilous."

"The idea of thus considering abstractedly the different simple tissues of our bodies, is not the wish of the imagination; it rests upon a real foundation, and I believe that it will have a powerful influence upon physiology as well as practical medicine. From whatever point of view we examine it will be found that they are unlike. It is nature, and not science, that has drawn the lines of demarcation among them. * * * * Simple inspection suffices to show a number of characteristic attributes. Here is a fibrous arrangement, there is a granular one, others are lamellated, and still others, areolar. In spite of these differences, authors are not agreed as to the limits of the different tissues. I have had recourse, in order to leave no doubt upon this point, to the action of different reagents. I have examined all textures; submitted them to the action of caloric, air, water, the acids, the alkalies, the neutral salts etc., drying, putrefaction, maceration, boiling, etc." He says further: "It would seem at first glance, that all these experiments on the intimate structure of the tissues would yield but little, but I believe they have attained a useful end in fixing with precision the limits of each organized tissue."

"Much has been said since the time of Bordeu, of the peculiar life of each organ, which is nothing else than that particular character, which distinguishes the ensemble of the vital properties of one organ from those of another. Before these properties had been analyzed with exactness and precision, it was clearly impossible to form a correct idea of this peculiar life. But by following the ideas which I have given, it is found that the organs are composed of very different simple tissues. It is thus evident that the idea of a particular life can only apply to those

simple textures, and not to the organs themselves." * * * * For example, if one should attempt to describe the peculiar life of the stomach, it is evidently impossible that you could give a very precise and exact idea of it. In fact, the mucous surface is so different from the serous, and both so different from the muscular, that by considering them together, the whole would be confused.

"I believe the more we examine bodies and observe disease, the more we shall be convinced of the necessity of considering local disease, not from the standpoint of the compound organs, which are rarely not affected as a whole, but from the standpoint of their different textures, which are almost always attacked separately."

"Let us not, however, exaggerate this independence of the tissues of the organs in disease, lest experience should contradict us, for we shall see that the cellular system is oftentimes a medium of communication, not only from one tissue to another in the same organ, but from one organ to a neighboring one." Thus again, he emphasizes the doctrine of the sympathy of parts which he regards as of great importance in the study of disease.

In describing the cellular tissue, Bichat says: "The figure of the cells is so variable that we cannot describe them in a general manner: round, quadrangular, hexagonal and oval are found together. The best way to see them is to freeze an infiltrated limb. Numerous little icicles are then formed, and show by their form, that of the cells which they filled. Artificial emphysema is also a good way. I have often determined by it, in our slaughter houses, where they blow meats, the form of the cells. All the cells communicate from the feet to the head, by blowing air under any portions of the cutaneous organ the whole of the body is bloated. We know that sometimes beggars make use of these means without danger, for the purpose of exciting compassion."

Speaking of the accumulation of fat, Bichat has cited some curious conditions, he says: "Great fatty accumulations are often an effect, almost instantaneous, of certain circumstances, for example, of atmospheric influence. It is thus that in twenty-four hours a fog fattens thrushes, ortolans and red throats so that they are unable to escape the sportsman. This phenomenon is very frequently observed in autumn."

In describing the muscular system, he first divides the muscles into long, broad and short, and in a second article, he describes the muscle fibres which can be seen in aggregate, but not singly because they elude microscopic researches, so great is the tenuity of the parts. Notwithstanding this extreme tenuity, a large number of researches have been made by Leuwenhoek and others during the last age, to determine with precision the size of the muscle fibre. I shall not give here these results, because we cannot rely upon their accuracy. Of what importance, moreover, is the size of the muscle fibre? This knowledge would add nothing to our physiological views on the motion of muscles. Further, he remarks: "I shall not speak here of the cylindrical form according

to some and the globular according to others; inspection teaches us nothing upon this point; how then, can we make an object of research and give an opinion upon that which has no real foundation? Let us say this much of the intimate nature of this fibre upon which so much has been written. It is unknown to us, and all that has been said upon its continuity with the muscular and nervous extremities, upon its supposed cavity, upon the marrow, which according to some, fills it, is only a collection of vague ideas which nothing positive confirms, and to which a methodical mind would not attend. Let us begin to study nature where she begins to come under our senses. I would compare the anatomical researches upon the intimate structure of the organs to the physiological researches upon the first causes of function. In both we are without guides, without precise and accurate data; why then, give ourselves up to them?"

In the description of the intestinal villi, he first compares them to the papillae of the skin and then says: "Very different ideas have been entertained of their nature; they have been considered in the stomach and the oesophagus as destined for the exhalation of the gastric juice." Leiberkühn had, through the microscopical examination, observed the vesicular appearance of the villi, but Bichat points out that Hunter, Cruickshank and Henson had all denied their existence, and says: "I am certain that I have never seen anything similar on the surface of the small intestines, at the time of chylous absorption."

After discussing the villi to a considerable extent, he maintains that the papillae and villi over all free surfaces of the body, have to do with sensibility. In a final consideration of these structures, he refers again to microscopical study, in these words: "The delicacy of these elongations conceals their structures even from our microscopical instruments, agents from which anatomy and physiology do not appear to me to have derived much assistance, because when we see obscurely, each sees his own way according to his own wishes."

With this incomplete and superficial study of Bichat's General Anatomy, we pass on to brief consideration of his Descriptive Anatomy. But before doing so, one point should be emphasized, viz: that although Bichat was the founder of histology, he failed to realize the importance of microscopic anatomy.

Bichat's Descriptive Anatomy was published during the years 1801-03. The first two volumes and a part of the third were probably written by Bichat. The rest of the third and the fourth were finished by Buisson, while Roux wrote the fifth. In his introduction, he says: "The twenty and one tissues were made the subject of my General Anatomy. Their diverse combinations will be that of my Descriptive Anatomy. * * * * The idea of an organ carries with it necessarily that of a composite of several different tissues, which, separated from one another, would be insufficient for the function of this organ, but one which, by their unison, they are able to execute."

MEDICAL AND SURGICAL PROGRESS.

THE TREATMENT OF SCAR-CONTRACTURE BY FIBROLYSIN.

A REVIEW OF RECENT LITERATURE.

By WM. ENGELBACH, M. D.

1. FIBROLYSIN.—Brandenburg (*Med. Klinik.*, 1907, No. 30).
2. THERAPEUTICS OF FIBROLYSIN.—Pope (*British Med. Jour.*, June 22, 1907).
3. THE USE OF FIBROLYSIN IN STENOSIS OF THE PYLORUS.—Ortner (Text '07).
4. FIBROLYSIN IN UNRESOLVED CROUPOUS PNEUMONIA.—Krusinger (*Muench. med. Wochenschr.*, No. 14, April, 1908).

Fibrolysin is a compound of thiosinamin with sodium salicylate. It is marketed in sterile solution put up in glass pearls, each containing 2.3 cm. which correspond to 0.2 g. thiosinamin. The contents of one pearl is injected into the muscles or given intravenously.

Since good effects with fibrolysin had been seen in adenitis, fibrous tumors, scar-forming skin diseases, in Dupuytren's contractions, in stenosis of the oesophagus due to scar formation, etc., the idea came to Domenico to try its effects in diseases of the eye. He had very good results in three cases of opacity of the cornea, in two cases of trachoma, in one case of opacity of the iris, and in one case of neuritis with atrophy of the optic nerve. The results of Brandenburg have not been as fortunate. He employed the remedy as an injection in the muscles of the thigh or into the gluteal region. Effects of local irritation were not observed. Pains of the injections themselves were little or nil. A harmful influence upon the general system was not noticed except in one case where there were complaints of dizziness and headache after 19 injections. Injections were given two or three times per week, in toto per case 12 to 20 times. In such manner Brandenburg treated one case each of opacity of the cornea following keratitis scrophulosa, keratitis purulenta, keratitis trachomatosa, two cases of chronic uveitis, and one case of chronic retrobulbar neuritis. It is true that some patients declared their eye-sight improved, but in no case could a considerable improvement be recognized as a result of the fibrolysin treatment.

Pope recorded a case of locomotor ataxia treated by intramuscular injections of fibrolysin which was followed by much improvement and a return of the knee jerks. The patient was 32 years old, and on coming under treatment he was a very typical case. He presented areas of paraesthesia and impairment of special senses, was very ataxic, had difficulty in micturition, and some hemiatrophy of facial and lingual muscles. He had Argyll-Robertson pupils, absence of knee jerks, and Rombergism. Treatment was begun on January 2d, 1907, by an intra-muscular injection of 2.3 cm. of fibrolysin. This was repeated on alternate days for nineteen times; at the end of which period there was improvement in standing and walking, but much incoördination persisted. After two more injections the knee jerks had returned. When twenty-four injections had been given in all the treatment ceased; but two months later the patient was still able to walk about with the aid of two sticks, the

knee jerks were retained, and there were no shooting pains—but the pupil reaction was unchanged. He recommended a further trial of this remedy in tabes. Further experiences with the same drug are recorded by Hastings. Some months after an attack of typhoid fever in 1889, a female, aged 46, began to suffer from an indurated patch on the calf of her left leg. This ulcerated and healed, but numerous other ulcers followed with increasing induration. The process lasted for years, so that in November, 1906, her condition was as follows: The lower half of her leg was firm, smooth, scarred, and contracted. In the center of the indurated area posteriorly there was an ulcer of the size of a crown piece. A smaller ulcer was situated below and in front of it. On the anterior and inner aspect of the limb there was a hard fibrous prominence, about the size of half a cherry. A half-ampulla of fibrolysin was injected on February 12th as treatment had not effected any improvement. This injection was repeated on February 15th, and for the next five weeks one ampulla was injected twice weekly into the limb in various situations. The injections were followed by marked local reaction. After the second, all pain ceased and the leg seemed softer than before; the ulcers also looked healthier. The nodule in front of the leg diminished in size. As the injections were persisted in the smaller ulcer entirely healed; the larger one became as small as a shilling and the fibrous nodule practically disappeared. The greatest relief experienced by the patient was the cessation of the pain. Hastings states that thiosinamin (fibrolysin) succeeds best when the fibrosis has existed for some considerable time. In sub-acute or barely completed pathological conditions it is contra-indicated, as it is liable to re-awaken the inflammatory process. The theory of its action is that its injection is followed by a hyper-leucocytosis, and it is thought that during this period a destruction and absorption of nodules and of cicatricial tissue may occur. This writer also refers to a case of keloid in which he employed thiosinamine injections, but the only effect was a temporary softening of the edges of the keloid patch. On the other hand, he states that the milder varieties of Dupuytren's contraction benefit from the treatment, as also fibrous stenosis of the oesophagus and pylorus, but it is of little value in urethral strictures.

Ortner has used fibrolysin in a number of cases of benign stenosis of the pylorus without any noticeable favorable effects. In some cases the injection of thiosinamin produced marked local inflammatory changes which, however, did not produce any serious effects.

Krusinger reports very favorable results upon two cases of unresolved pneumonia treated with fibrolysin. One case had persisted for four weeks after the crisis, with the x-ray findings of consolidation of the lung. The other case had resisted the ordinary treatment for two weeks after the crisis. In both of these cases there was an immediate change of the physical findings after the first injection of fibrolysin, and after a short series of injections of the ordinary amount the lungs in both cases were free from all signs. Previous abstracts on this subject have been given in this JOURNAL referring to the treatment of arteriosclerosis, chronic valvular diseases of the heart, chronic adhesive peritonitis, etc., which have varied to a considerable extent as to their favorable effects. If one could draw any conclusions from the treatment of chronic connective tissue contractures by fibrolysin the most one could infer was that this treatment has not proven successful, but as most of these conditions are such that other treatment has very little effect one is warranted in recommending fibrolysin as so far no bad results have been recorded and some cases have been reported improved from its use.

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. BEITRÄGE ZUM STUDIUM DES SÄUGLINGS PYLOROSPASMUS.—Wernstedt (*Jahrbuch f. Kinderheilk.*, June, 1907).
2. STUDIUM UEBER d NATURE d SOGEN. ANGEBO. PYLORUSSTENOSE.—Wernstedt (*Abstr. Monatschr. f. Kinderheilk.*, September, 1907).
3. PYLOROSPASM.—Heubner (*Monatschr. f. Kinderheilk.*, Vol. 5, page 355).
4. CONGENITAL PYLORIC STENOSIS.—Cautley (*Brit. Med. Jour.*, October 13, 1906).
5. ANGEBO. PYLORUSSTENOSE U. IHRE BEHANDLUNG.—Bloch (*Jahrbuch f. Kinderheilk.*, March and April, 1907).
6. GASTRITIS IN PYLORUS STENOSIS.—Romme (*Presse Medicale*, May, 1907).
7. PYLORIC STENOSIS.—Frölich (*Norsk Mag. Jahrbuch f. Kinderheilk.*, July, 1907).
8. GASTRIC CONTENTS IN PYLORIC STENOSIS.—Tobler (*Monatschr. f. Kinderheilk.*, October, 1907, page 346).
9. CAUSE OF DEATH IN PYLORIC STENOSIS.—Meyer (*Monatschr. f. Kinderheilk.*, May, 1907).
10. PYLORIC STENOSIS.—Kimball and Hartley (*Arch. of Ped.*, March, 1907).
11. CLINICAL SOCIETY OF LONDON REPORT. (*Lancet*, 1907, Vol. 172).
12. Carpenter (*Med. Press and Circular*, July 4, 1906).
13. Carpenter (*Brit. Jour. Chil. Dis.*, February, 1908).
14. Schitormirsky (*Muench. Med. Woch.*, January 29, 1907).
15. Furmann (*Russk. Vrach.*, 1907, No. 11).
16. Uffenheimer (*Muench. Gesell. f. Kinderheilk.*, March 11, 1907).
17. MEDICAL TREATMENT OF PYLORIC STENOSIS.—Sutherland (*Lancet*, March 16, 1907).
18. Ibrahim (*Jahrbuch f. Kinderheilk.*, February, 1907, page 237).

As the result of his anatomical studies, Wernstedt says that cases of pyloric stenosis should be divided into two groups. (1) A congenital stenosis, a malformation dependent upon fetal changes. This form is very rare. (2) Congenital *hypertrophic* stenosis, including the large majority of all cases. Here the musculature is hypertrophied not only at the pylorus, but throughout the body of the stomach as well, even at the fundus. Pathogenetically it would appear clinically as well as anatomically, that the stenosis is due originally to a spasm of the pyloric and antrum musculature. Wernstedt holds that while the condition is probably congenital, indisputable proof of this has not yet been furnished. He thinks that there exists at birth a predisposition to spasm with secondary hypertrophy. This postulated predisposition to spasm is to be explained by imperfect development of the nervous mechanism regulating gastric motility. The increased, and partly entirely new, demands made on the stomach directly after birth, might easily be the cause of the dis-

turbances of the nervous mechanism. Heubner has made a careful statistical study of all of his cases. In a clinical material embracing 10,000 infants, he has found pyloric stenosis in 49 cases. Of 21 cases that could be followed, 18 were alive a year later. Heubner also holds that there is a muscular hypertrophy not only of the pylorus, but of the rest of the stomach as well. This hypertrophy is secondary to a functional disturbance (spasm), and there is therefore *no* primary malformation or new growth.

The diagnostic symptoms have been thus set forth in the order of their importance, by Cautley: Forceful, ejectile vomiting, constipation, with clean tongue and sweet breath; visible peristalsis; palpable pyloric tumor, and dilatation of the stomach.

In cases of simple pylorospasm, the vomiting is usually different for the food is usually brought up at once without any ejectile effort with rather the effect of a simple regurgitation. Peristalsis is slight or absent and no pyloric tumor can be felt. It is rare for two or more feedings to be retained and then vomited, as is often the case in pyloric stenosis. In his careful anatomical and clinical study, Bloch discusses the various symptoms in detail. He distinguishes two periods of vomiting, even in the cases of stenosis, viz., food vomited directly after ingestion and a period in which food is retained for some time before being ejected. Peristalsis is noted *only* during the second period. According to Bloch, the condition is much aggravated by the frequently complicating gastritis, which diminishes the motor power of the stomach and increases the stenosis. Romme has also found the gastritis to be a factor of importance in these cases, and Furmann has reported a case where medical treatment as such was of no avail until attention was paid to the accompanying gastritis, when recovery followed. Tobler made a series of examinations of the stomach contents in a typical case, in which there was often retention for several hours at a time. He found that there were always fats in the stomach, whenever these had formed part of the food (e. g., milk). He believes that there exists in these cases a serious disturbance of the "fat transportation" through the stomach, which would explain the fact (noted by many observers) that these cases do better on a fat-free diet. Meyer has studied cases with a view to determining the cause of death. He denies the generally accepted statement that death is due to persistent vomiting and consequent starvation. In three fatal cases, the infants really recovered from the stenosis, but succumbed to a form of intoxication (alimentary intoxication with glycosuria). The loss of tissue probably leads to disturbances of the processes of nutrition. Death is therefore an indirect rather than a direct result of inanition. These observations show the importance of not keeping the food supply too low in these cases, and the necessity of resuming ordinary diet as rapidly as possible after vomiting has ceased.

There has been much discussion of late as to the proper method of treatment. A review of the general literature must necessarily lead one to the conviction that, on the whole, the best results have followed the use of medical treatment properly carried out. In Germany, for instance, fewer cases are being operated on now than ever before, because of the good results that have been brought about through proper medical treatment. And even in England, the view is generally gaining ground that surgery should not be resorted to too early. In large part, the good results of medical treatment have been due to the general recognition of the value of daily gastric lavage in these cases. Pfaundler, who has done a great deal of work in this field, says categorically that lavage is to be

considered as almost a specific. Whether, as Bloch and Carpenter hold, this lavage acts by relieving the underlying gastritis, or whether it is merely an excellent antispasmodic, may well remain undecided; the fact of its therapeutic value is indisputable. Lavage also prevents stagnation of food and tends to diminish the danger of gastric dilatation.

The surgeons hold that when cases are relieved or apparently cured by internal treatment, doubt must be cast on the diagnosis, and they claim that the medical "cures" are always and solely cases of simple pylorospasm. This claim is abundantly disproved by the published cases of Bloch, Ibrahim and Batten. All of these men have had cases recover under purely medical treatment, the children dying at some subsequent period, of some intercurrent affection. Autopsies in all of these cases have shown the presence of hypertrophied gastric and pyloric musculature *without* remaining stenosis, showing that the cases had originally been unquestioned cases of hypertrophic pyloric stenosis.

So far as recent clinical reports as to the relative value of surgical and medical treatment are concerned, the following figures are of interest: Kimball and Hartley report an operative case (gastroenterostomy) in an 8 weeks old infant, with perfect recovery. These authors could find only 3 reported recoveries in this country after operation. They refer, however, to Fisk's figures, 71 operative cases with recovery in 53 per cent.

In a discussion before the Clinical Society of London last year, Voelcker reported 39 cases observed in 10 years (35 in boys) with 34 deaths. (Methods of treatment not given.)

Burchard reported 16 operations (pyloroplasty) with 10 recoveries. Dent reported 120 operated cases with a mortality of 50 per cent.

Still reported 23 cases, 14 recoveries; 8 with operation, 5 with lavage, 1 with simple regulation of the diet. Of his 9 fatal cases, 3 were operated, 3 were treated medically and 3 were not treated at all.

Bloch reports 12 cases. 4 operated on with 2 deaths, 8 treated medically with 2 deaths.

Carpenter in 1906 reported 3 cases, all operated, all ending fatally. In 1908 he reports a case successfully treated medically.

Sutherland reports 3 cases of recovery under medical treatment. Schitomirsky two, Furmann and Uffenheimer each one.

In general one may say that from a review of the literature, one is forced to the conclusion that surgical intervention is not justified (even with the diagnosis absolutely made) until careful medical treatment, according to modern methods, has been thoroughly tried. The principles of this medical treatment may be thus briefly summarized: (1) Daily lavage. (2) Regulation of the diet. (3) The use of drugs. As to diet, it appears that non-irritating food is necessary. Excellent results have followed the use of small quantities of buttermilk, or of whey with added milk sugar or of breast milk when obtainable. If whey is used, cream may gradually be added. An important feature is to keep up the nutrition as well as possible by forcing the feeding as quickly as may be.

Of drugs, opium easily holds first place. It is to be given in appropriate doses frequently repeated and probably is much better as an antispasmodic than bromide. When there is great prostration, salt injections are often of value. Constipation is to be relieved by enemata. Purgatives should not be used.

With reference to the operation of choice, should surgical intervention be decided on, it seems that at present gastroenterostomy, pyloroplasty and Loreta's operation (divulsion) are used, preference coming in the order named.

THE RELATION OF NASAL AND ACCESSORY SINUS DISEASE TO CERTAIN DISORDERS OF THE EYES.

A REVIEW OF RECENT LITERATURE.

By JOHN GREEN, JR., M. D.

1. THE POSITION OF THE OPHTHALMOLOGIST IN THE TREATMENT OF DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.—W. C. Posey (*Ophthalmic Record*, August, 1907).
2. CONTRIBUTION TO OUR KNOWLEDGE OF OPTIC NERVE DISEASE IN CONNECTION WITH DISEASE OF THE POSTERIOR ACCESSORY SINUSES OF THE NOSE.—Birch-Hirschfeld (*Graefe's Arch.*, May, 1907, lxxv, H. 3).
3. A STUDY OF OPTIC NEURITIS IN CONNECTION WITH NASAL ACCESSORY SINUS DISEASE.—H. M. Fish (*The British Med. Journ.*, November 2, 1907).
4. DISTURBANCE OF VISION AND BLINDNESS PRODUCED BY CONTRALATERAL NASAL AFFECTION.—A. Onodi (*Orvosi Hetilap*, xxx, 1906).
5. TWO CASES OF NASAL AFFECTION, WITH COMPLICATING OCULAR SYMPTOMS.—Deleneuve (*La Clinique Ophthalmologique*, September 25, 1907).
6. IRITIS DUE TO THE DISEASE OF THE SINUSES.—F. G. Mason (*Iowa Medical Journal*, December 15, 1907).
7. OPTIC NEURITIS AFTER DISEASE OF THE POSTERIOR ETHMOID CELLS.—A. Knapp (*Arch. Ophth.*, January, 1908, xxxvii, 24).
8. THE RELATION OF THE EYE AND THE NOSE.—H. C. Parker (*Ophthalmology*, April, 1908).

The present universal appreciation of the close relationship between nasal and sinus disorders on the one hand and ocular and orbital disease on the other has rendered it a matter of great difficulty, in many instances, to determine the borderline between the fields of ophthalmology and rhinology. Thus we find in rhinological journals a discussion of the technique of operations on the orbit and in ophthalmological journals a consideration of nasal surgery in so far as it encroaches upon the eyeball and the orbital cavity. This question has been carefully considered from the ophthalmic standpoint by Posey,¹ who believes that the ophthalmologist should so familiarize himself with the anatomy and diseases of the accessory sinuses of the nose that any operative work upon the orbit from extension of disease of the sinuses can be performed by him in a thorough and intelligent manner. Upon the ophthalmologist should rest the operative responsibility, but the advice and assistance of the rhinologist are invaluable.

An analysis of four cases in which optic nerve disease occurred in connection with disease of the posterior accessory sinuses and a consideration of the literature have led Birch-Hirschfeld² to the following conclusions: First, That inflammatory affections or neoplasms of the

posterior ethmoidal cells may spread to the orbit or optic nerve and produce early and severe damage to visual acuity, leading sometimes to blindness. Second, that visual disturbance may first appear as a central scotoma with intact peripheral field. Third, that the early demonstration of central scotoma may be of the greatest significance because of the difficulty often experienced in diagnosing affections of the posterior ethmoid and sphenoid cells. Fourth, that the differential diagnosis between a toxic and optic neuritis and that due to infection of the posterior ethmoid cells should rest upon (a) the unilateral nature of the condition (not invariably so!) (b) The relatively acute development of the visual disturbance and the tendency to progression into an absolute scotoma, while later there is a contraction of the peripheral field. Fifth, that the anatomical cause of the central scotoma may be due to an isolated disease of the papillo-macular fibres behind the position of the entrance of the vessels. It consists of an edema of the optic nerve, swelling and proliferation of the ganglion cells and a pronounced degeneration of the nerve fibres.

The causal relation between optic neuritis and sinus disease appears to be pretty well established. Certain writers, however, regard the two lesions when present as merely coincidental. In an effort to disprove the latter view Fish³ has made a careful search of the literature and has unearthed about 100 cases of primary and secondary optic neuritis with all degrees of visual disturbance in which one or more of the nasal sinuses, have caused the neuritis. This finding is at variance with the generally accepted theory of to-day that the nerve lesion is due solely to an extension by continuity. Allusion is made to the extreme frequency of sinusitis, the fact that chronic sinusitis may lie dormant for months or years and that sinus disease is found with extraordinary frequency by pathological anatomists. Many so-called idiopathic ocular lesions are, in the author's estimation, ocular extensions of sinus disease. He gives a table of thirty-six consecutive cases of optic neuritis in which nasal accessory sinus disease was present twenty-six times. Another table comprises four bilateral cases and forty-one unilateral cases of various reporters in which there was improvement after treatment of the sinuses; and a third table of thirty-nine examples reported by different observers in which no improvement followed treatment of the sinuses. Fish especially emphasizes the fact that a negative nasal finding does not exclude sinus disease and furthermore that such disease is the most frequent cause of affections of the optic nerve.

The relation of the posterior ethmoid cells and the sphenoid bone to the optic nerve and chiasm has been carefully studied by Onodi.⁴ He concludes that unilateral, bilateral, and contralateral disturbances of vision and blindness are often caused by affections of the posterior ethmoid cells and the sphenoid sinus.

existence of a sphenoidal sinusitis. R. V. counts fingers at 1 meter. L. V. 5-10. Treatment directed to the nasal affection brought about complete restoration of vision.

It is now recognized that iritis and iridocyclitis may rarely be due to sinus disease. Mason⁶ discusses the pathology of this condition. He reports two cases of severe inflammation of the entire uvea, in one of which one eye had to be enucleated; in the other one eye was already blind from occlusion of the pupil. Recovery from uveal inflammation was affected in the first case by relief of the sinus inflammation by removal of the anterior portion of the middle turbinate, and in the second case by removal of the posterior end of the turbinate to free the sphenoid

cells from pus. Ocular symptoms frequently due to sinus disturbance, include headache, lacrimation, uveitis, muscle imbalance, ocular vertigo, and neuralgic pain. Whatever ocular signs are present are apt to be more pronounced in the morning and are frequently unilateral.

Deleneuve⁵ reports a case of a man, forty-six years old, who had a retrobulbar neuritis. Examination of the nose demonstrated the

Optic Neuritis after Disease of the Posterior Ethmoid Cells is discussed by Arnold Knapp,⁷ who reports a case of involvement of the optic nerve incident to an acute posterior ethmoiditis. The fundus showed a typical neuroretinitis. V. 20-80. Visual field, normal peripherally, displayed a relative central scotoma for white and colors of five degrees. The anterior half of the middle turbinate was resected, and the posterior ethmoidal cells curetted. Seven weeks later vision and fundus had become normal.

The whole subject of the relation of the eye and the nose has been carefully and concisely summarized by H. C. Parker.⁸ He recalls the fact that the relation between lacrimal blennorrhoea and nasal inflammation has been recognized many years, and asserts that at least 50 per cent. of all such cases are due to nasal disease. He claims that practically every case of phlyctenular conjunctivitis and keratitis are dependent upon a nasal or postnasal disease. Such cases demand for permanent cure appropriate treatment of the nose in conjunction with ocular and general measures. Disease is transmitted from the nose to the eye in three ways: First, by way of the naso-lacrimal duct; second, through the blood stream, and third, by way of the nerves. The first method of propagation is the most important.

Serpiginous ulcer of the cornea, tuberculosis of the eye, diphtheritic conjunctivitis and gonococcal ophthalmia have all been traced to infection from the nose.

The intimate relation of the vascular system of the nose and eye explains certain cases of iritis and inflammations of the whole uveal tract. Even monocular glaucoma has been with much plausibility ascribed to nasal abnormality. Various symptoms of asthenopia arise from reflex nervous irritation of the nose. This may be due to muscular insufficiency, or irregular contraction of the ciliary muscle. Such cases usually show nasal or accessory sinus disease, the vast majority having an hypertrophy of the turbinates. He alludes to the cases referred to by Haskell as suffering from "potential contact," i. e., contact in the nose which is only present at times. The days on which the turbinates are not in contact with the septum, the patient suffers no ocular symptoms. Other days when the nose does not offer free passage to air the ocular symptoms return. Such cases as these, even if the refraction is corrected by mydriatic test cannot wear their glasses with comfort, and it is not until nasal obstruction is relieved, usually by operation, that the refractive error remains constant and the ocular symptoms disappear. Variation in the axis of an astigmatism on one side is not rarely to be accounted for by congestion or hypertrophy on the corresponding side of the nose.

The frequency with which muscular imbalance is associated with enlarged turbinates, spurs, deviations and especially with accessory sinus disease leads this author to affirm the necessity of thorough nasal examination and treatment of any existing nasal disease before resorting to the use of prisms or performing tenotomy or partial tenotomy for the correction of this error. He well says "the operative treatment of muscular insufficiency has given rise to more neurasthenics and less relief than any other form of ophthalmic treatment in recent years."

Emphasis is laid on the fact that monocular headache, not necessarily dependent upon the use of the eyes, and which is more severe in the morning and is greatly accentuated when the patient stoops, usually indicates sinus disease.

Purulent sinus disease, especially of the frontal, causes various ocular symptoms by direct transmission of infection to the orbital cavity. This suppurative process extends by means of the small vessels (or necrosis) to the periosteum of the orbit, where it causes a periostitis or a subperiosteal abscess, which in time becomes an orbital abscess.

The anatomic position of the accessory sinuses readily explains how infectious processes pass from them into the orbit. The os planum of the ethmoid forms the inner wall of the orbit. The floor of the frontal sinus forms part of the upper wall of the orbit. The antrum, or maxillary sinus, lies beneath the floor of the orbit. The sphenoid sinus may under certain circumstances come into contact with the orbit and the dividing wall may be so thin as to offer little resistance to the advancement of purulent disease.

However necessary recognition and treatment of the nasal abnormality may be in these cases, it is equally incumbent upon the physician not to neglect local treatment of the eyes.

CORRESPONDENCE.

LONDON LETTER.

[FROM OUR OWN CORRESPONDENT.]

The annual conversazione of the Royal Society was, as always, a most successful and very enjoyable function. The exhibits were full of interest and ranged over much ground in the realms of science. A very popular demonstration and one that caused great amusement was that by Professor C. V. Boys of the dynamics of that terrible infliction—diabolo! The medical exhibits were especially good, in particular that sent by the Executive Committee of the Cancer Research Fund. This consisted of a really beautiful series of photo-micrographs, which showed every step in the change from carcinoma to sarcoma. Another series of photo-micrographs showed that the types of cancer in vertebrates differed with different species. This had a direct bearing upon the series of diagrams, which illustrated the manner in which immunization had been obtained in mice by the injection of an extract of the skin of embryo mice. The difference in type in different species clearly shows that immunity in a given species can only be secured by using the extract obtained from the skin of a member of the same species. In the diagrams it was shown that in the case of a mouse infected with a cancerous tumour, no fresh tumour can be ingrafted into it, if it has been protected by the extract of embryo mouse-skin. Another exhibit of great interest was Mr. Gordon Hewitt's description of the life-history of the house-fly, showing that economically his presence was of benefit only as evidence of the existence of dirt of every description, but chiefly excrementation. This exhibit reminded one of the fact that a most useful investigation is being carried on at the instigation of the Local Government Board as to the connection of the house-fly, under which general name are included several distinct species, with certain diseases. One exhibit at first sight seemed to have mistaken the *locale*, and should have properly been at a vegetable show, but it belonged to Professor Bottomley who showed a collection of very fine turnips, radishes and beet-root taken from crops inoculated in the field with the nitrogen-fixing bacteria. The Grouse Disease Commissioners' Exhibit showed the parasites to which these birds are liable—the most frequent and fatal being nematode worms in the intestines.

The Anti-vivisection Societies are a good deal worried just at present. They are not particularly happy about the forthcoming report of the Royal Commission and are industriously vilipending the individual Commissioners. Now a fresh annoyance has been sprung upon them in the shape of the Research Defence Society, which is being formed under the presidency of Lord Cromer. A good start has already been made in the issue of pamphlets and leaflets on different subjects. Mr. Stephen Paget is the honorary secretary and it is safe to predict that much good work will be done in correcting the flatulent ebullitions emitted *ad nauseam* by the various anti-bodies. The Swedish lady, who poses as an authority on physiology, on the strength of having attended a summer course of lectures on the subject with the avowed intention of obtaining evidence of the cruelty, etc., etc., now has a Council of her own.

The Goulstonian lectures at the Royal College of Physicians have this year been delivered by Dr. Herbert French, Assistant-physician to Guy's Hospital, who selected as his subject the influence of pregnancy upon certain medical diseases, and of certain medical diseases upon pregnancy. The field covered was a most extensive one and each subject was dealt with exhaustively. The lectures will form a valuable contribution to

knowledge for much original work has been included. The lecturer has added considerably to his reputation, already a growing one, as one from whom much may be expected in the future. His selection for the honourable task of Goulstonian lecturer at so early a stage in his career is itself a very notable fact.

An interesting and in many ways informing discussion took place recently at the Royal Society of Medicine on the diagnostic value of the X rays in tuberculosis of the lungs, more especially as concerns the early recognition of the presence of the disease. Ardent radiographers maintained the superiority of the skiagram, but on the other hand there was ample evidence forthcoming that, at all events at present, skilled and accurate percussion holds the premier position as the vital element in diagnosis at an early stage. If the discussion emphasized nothing else, it certainly showed the great necessity for acquiring a skilled and delicate method of percussion together with an instant and accurate power of interpretation. The *tactus eruditus*, that trained and disciplined sensibility of the finger-tips, is, and will always remain, the hall-mark of the good diagnostician. No recording instrument, however dainty and ingenious, can ever replace it. The delicate perception of the pulse, which the old-time physicians developed to such a remarkable degree, is still a most desirable accomplishment.

Sir Samuel Wilks has again taken advantage of the advances in modern surgery, and has been happily relieved of a painful and distressing disorder by Mr. Charters Symonds. He will be 84 years old in June, and the latest reports give excellent news of a good recovery.

A well-known name disappears from the consulting staff at St. Thomas's Hospital and one which was held in general esteem and regard not only for his personal qualities, but also for his professional work and attainments. Dr. C. J. Cullingworth, Consulting Obstetric Physician to that institution has just succumbed to angina after suffering from attacks of the disease for some years. He came to London from Manchester about twenty years ago.

June 10th.

PARIS LETTER.

[FROM OUR OWN CORRESPONDENT.]

It is admitted to-day by the best authorities that the curability of pulmonary tuberculosis depends on whether or not an early diagnosis has been made. We know from Grancher's investigations that the presence of a souffle and moist râles indicates an advanced period in the disease; and that to make an early diagnosis it is necessary to ascertain if at the apices of the lungs, there are certain modifications of the vesicular murmur perceptible on inspiration. Grancher has also taught us as symptoms of the initial tubercle, a rough or weak inspiratory sound, and a diminution of the vesicular murmur.

In spite of the weight of Grancher's opinion, all doctors are not at one as to the semiologic value he attaches to the inspiratory changes at the apices of the lungs, as an early diagnostic point in incipient tuberculosis. M. Fernand Bezançon, in the course of his investigations on this subject, has succeeded in relieving 173 cases in which there was a diminution in the vesicular murmur at the apex, without râles, and without modifications that could be noticed on percussion.

In certain cases the important point was the complete absence of the vesicular murmur, or a lessening more or less complete without change in the timbre; at other times besides the lessening there was the rough respiratory sound described by Grancher. The seat of this lessening in the

murmur was not confined to one side, appearing as often on the right side as on the left; in fact, in 127 cases, it was evident on the right side while only in 46 cases was it noticed on the left. The greater frequency of abnormal inspiration on the right side has also been observed by Grancher and his pupils in the course of examinations made in the schools of Paris. In the course of a methodical auscultation of a large number of children, who in appearance seemed healthy, it was found that out of every hundred examined, 15 had an abnormal respiration, consisting of feeble inspiration at the apex, especially on the right side. M. Lemoine, of Val-de-Grâce, has had similar results on examining a number of soldiers.

Two-thirds of the cases examined by M. Bezançon had either an antecedent history or symptoms of sufficient gravity to warrant us in pronouncing them carriers of the tubercle. In these instances it is only the exceptional case where we can truthfully say that the diminution in the vesicular murmur was the first symptom in the incipency of the disease, since in the majority of cases the general or functional signs which were present had appeared many years before. Nevertheless, it should not be overlooked that the tuberculous disturbances more or less latent, which are clinically observed, are the second stage of the disease. The first stage may last during the whole period of childhood or, in case of the adult, during many years.

The diminution in the vesicular murmur appears then as a permanent symptom and not as a transitory sign necessarily preceding the souffle and the moist râles. In fact, this clinical picture is often abortive, since the diminution of the murmur is in accordance with the retrocession of the tuberculous lesions or, at least, with amelioration of the severity of the case. Hence it can be said in all truth that the diminution in the vesicular murmur as a clinical factor is not necessarily a symptom occurring at the inception of pulmonary tuberculosis.

In the second group of cases examined—this group was equal to one third of the number—there were no tuberculous antecedents. Some of the patients, however, were found to have indications of chlorosis while others were suffering from lesions of the rhino-pharynx. What then is the significance of the symptom when it occurs in subjects apparently free from tuberculosis? The answer is difficult, to say the least. The probability is that a certain number had latent tuberculosis, others tracheo-bronchial adenopathies, and the rest may have been in a neuro-pathic state.

The frequency of the vesicular murmur on the right side is difficult of explanation. Certain authors assert that the murmur is more intense on the left side. Others are of the opposite opinion. Sometimes it happens that when individuals breathe normally, there is no appreciable difference between the two apices. Moreover, it would not be uninteresting to take up the study, at some future day, of the tracheo-bronchial glands and ascertain, if possible, if the glands on the right side are not larger and more numerous than on the left.

The conclusion to be drawn from the above is that a diminution in the vesicular murmur at the apex, especially on the right side, is symptomatic of the probability of the presence of tuberculosis,—not of the incipient sort but of the torpid, latent and milder forms. But if the murmur appears simultaneously with the unmistakable signs and symptoms of the disease, it may be regarded as a diagnostic point. If, on the other hand, there is no fever, no loss of weight, no anorexia, it would be well to keep such a patient under observation since, according to the teachings of our present scientific knowledge of the disease, it is not possible to pronounce him tuberculous.

June 10th.

OBITER DICTA FROM FOREIGN JOURNALS.

THE DEGENERATION AND DIPSO MANIA OF EDGAR ALLAN POE.

Of all our literary men, Poe is better known in France than some of our writers who have achieved greater fame at home. This is not surprising when one remembers that not only was the poet and romancer a man of extraordinary talent, in the sense of possessing genius that was a new manifestation in the world of letters, but his individuality was erratic and unusual enough to make appeal to the critical—especially to the French, who are known to take a deep interest in the vagaries of human nature. In a recent issue of the *Journal de Médecine et de Chirurgie* there appeared the following article telling us some of the reasons for the American poet's eccentricities:

Nothing would be more interesting than a work which would give us a composite picture, not only of all those writers who have suffered from a sudden attack of insanity occurring early or late in their careers, but also of those who produced their most celebrated books while in a state of alienation. Although such cases are numerous enough, we believe they have never been studied together. Now while Dr. Carrère in his Toulouse thesis on Edgar Allan Poe continues on the old lines of limiting his study to one individual, his effort is worthy of the highest praise, for his diagnosis of the poet's mental ailment—the insanity of degeneration—is supported by forceful and scientific argument.

The poet's insanity, according to Dr. Carrère, was characterized: First, by the influence of heredity—and in the poet's case heredity was decidedly influenced both on the paternal and maternal sides; secondly, by impulsiveness for he was an avowed dipsomaniac, whose dipsomania was the cause of prolonged alcoholic intoxications, intellectual manifestations of which we find in those of his works where fantasy and fear occupy a prominent place; thirdly, by a succession of periods of melancholic depression alternating with maniacal excitation; and this phase of his ailment was so pronounced that it could easily pass for circular insanity; and finally, when under the influence of liquor, his insanity was well established since it had the characteristics of a polymorphous delirium in which the successive stages occurred so rapidly that they superposed on each other until there was complete confusion.

The manner of Edgar Allan Poe's death deserves some mention. To quote the author: "On the Friday preceding his death, according to Dr. Moran, the conductor of the train by which he was traveling ostensibly to Philadelphia, seeing that he was in no fit condition, put him on another train at Havre de Grace and sent him back to Baltimore. Arriving there during the night, instead of going at once to an hotel, he wandered about the streets and while in this state of stupor was corralled by a gang of political thugs, who despite his pitiable condition, marched him, from early morning, from polls to polls to vote in their stead. A

printer who later found him more dead than alive at the fourth ward polling station in Ryan's saloon, took pity on him and sent word to an old friend of the poet's, Dr. Snodgrass, to come at once. Recognizing his deplorable condition, the doctor sent him to the Washington Hospital, where he was admitted at five in the afternoon; his relatives, especially his cousin, Neilson Poe, being immediately apprised of his whereabouts. From the time Poe entered the hospital, his delirium increased and on the next day, Sunday, towards five o'clock (Oct. 7, 1849) death set in."

AMAUROTIC FAMILY IDIOCY.

MM. L. Babonneix and M. Brelet, in the *Gazette des Hôpitaux* of May 16th, have a highly interesting contribution to the study of amaurotic family idiocy. The following extract, though brief, is indicative of the thoroughness which characterizes the article throughout:

The researches of Bourneville and Séglas, of Fouque, Riva, and Trénel, have established the existence of a family idiocy which is peculiar to children in the same family and manifests itself, moreover, in all, in the same symptomatic manner at similar periods in their physical and mental development. Of the family idiocies which can without doubt be attributed to functional insufficiency in certain nerve territories, the amaurotic sort is the most important. The principal characteristics are that though the child is normal at birth, in the course of the first year it shows psychic disturbances which approach to idiocy. At the same time there occurs a progressive diminution in the sight and, finally, complete amaurosis. These ocular disturbances can be traced to a special lesion of the macula and an atrophy of the optic nerve. The child gives evidence of weakness in the limbs: a slight palsy, at first indicated by feebleness; later it is often spasmodic. Marasmus ensues, followed by death in the second year. These characteristics are seen almost exclusively in the Jewish race, and invariably indicate amaurotic family idiocy.

This disease was first described by Warren-Tay. In 1881 he described a characteristic lesion of the fundus of the eye in children affected with family idiocy, and in 1884 he published some new observations in connection with analogous cases, reported in Germany and America. But it was not until Sachs published his researches that a complete clinical description with the anatomical lesions of this little known affection, which Sachs called amaurotic family idiocy, was made known to medical men. Until 1906 the Warren Tay-Sachs account of the disease was the only one known in France; the foreign researches being the only ones to hand. True, short analyses of the work done by foreigners appeared now and then; as for instance in the article on "Idiocy" by Chaslin, in the "Treatise of the Diseases of Children;" by Londe in the "Treatise of Medicine," and by Bourneville in the "Treatise of Medicine and Therapeutics." A general review by Sarvonat (Feb., 1906) and a thesis by Provotelle (July, 1906) were the first important works on amaurotic family idiocy, by Frenchmen, to attract attention to a disease of which no case had as yet been reported in France.

MM. Apert and Dubois have recently communicated to the Société de pédiatrie the first account of a case occurring in France, and M. Apert has also published in the *Semaine médicale* a documentary study of considerable importance. On account of the paucity of French literature bearing on this strange affection, it has appeared important to us to expatiate on the sources of knowledge in connection with its history, as a help to making a diagnosis; in the hope that other cases will be found in France, especially in Paris where Russian and Polish Jews are numerous enough. To show how little is known of this disease in France, we need but cite MM. Apert and Dubois' experience with the parents of the child shown at the Société de pédiatrie. On inquiry they were enabled to make a retrospective diagnosis as the parents told them that another of their children had been examined in many hospitals and finally died at the Hospital for Sick Children, without any positive diagnosis having been made.

That amaurotic family idiocy is rare, the fewness of the cases reported until now shows unmistakably. In reality the number of cases of which accounts have been published does not exceed one hundred. Two etiological conditions are well established: the predisposition of the Jewish race and its recurrence in the same family. Almost all the infants afflicted were Jews and for the most part Polish. Hence one is justified in calling it a racial malady. Observations made in America, in Italy by Marina, and in France by Apert and Dubois, confirm this opinion. According to Heveroch's statistics, of 86 cases 61 were Israelites, 7 Christians and in the remaining 17 the race was not indicated. The characteristic regarding its recurrence in the same family was noted by the writers who first described amaurotic idiocy and later observers have given it recognition. Tay's case showed three brothers affected; Kingdon's, five in a family of seven, and Falkenheim has described the genealogy of a family in which in three generations, eight children succumbed.

Besides these two characteristics nothing that may be considered accurate or positive as regards the etiology of the disease is known. The matter of sex plays no important part, for statistics show but a slight preponderance among girls. According to Klozenberg, the children, for the most part, belong to poor families, generally emigrants of the Polish Jewish class living in America, England, and Germany. Apert thinks it possible that the transplantation of these people may be its pathogenic cause. The consanguinity of the parents has often been mentioned as a possible provocative. This is not surprising since consanguineous marriages are decidedly frequent among the Jews. But at present consanguinity is no longer considered, by itself, an inciting cause; it merely decreases the child's resistance, especially in a family characterized by neuropathic defects. Again alcoholism, syphilis, and tuberculosis, on the part of the parents, seem not to be predisposing causes. On the other hand dementias and the psychoses affecting divers members of a family have at times been noted.



Consultations Gratuites.
Robert Macaire Médecin. Daumier (1830).
(From Holländer's Die Karikatur und Satire in der Medizin.)

HISTORICAL NOTES.

GRATUITOUS CONSULTATIONS.

Among the caricatures which speak for all times, none has a greater pertinency than Daumier's pictorial description of the physician who is willing to give so-called scientific advice to patients, provided the latter consent to pay a goodly sum for the medicaments. Although originally intended as a lampoon of the eminently respectable Citizen-king, Louis Philippe—a king who under the guise of smug respectability extorted large sums in the way of taxes from his beloved citizens—it can, without any detriment to its original value, be made applicable to all physicians of ancient and modern times who have indulged in the sycophantic role of benefactor to the poor. The part played by these exponents of the assailable theory of wickedness attaching to the bartering of knowledge but only honor redounding when a slight increase in the price of the medicine is exacted, is one that has lent itself only too often to the imaginings of dramatists and novelists, with results one would prefer not to mention.

Now though at times ridicule kills, it seems quite ineffective as regards our medical Robert Macaires, for though nearly eighty years have passed since Daumier drew his caricature with its mordant wit, and others of less talent have not failed to send their barbed arrows in the same direction, such is the ineffable gullibility of the masses that the Macaires continue to fatten, by allowing their affluent minds to figure the factitious price of medicine to be something like a louis d'or,—of course with the kindly and gracious rebate of ten centimes in case the bottle is returned. That this custom, though fortunately limited only to the minority in the medical profession, should show no signs of the ravages of time, or of the many attacks directed against it by all advocates of honor and probity, does not speak well for the masses; for were it not for their disinclination to pay for what they consider intangible—good sound advice born of the true spirit of science—and their inordinate love of the tangible in the shape of voluminous quantities of medicine, prosperity would no longer be the watchword of our modern Macaires.

We do a great deal of talking in these parlous times about the uplift of those whose benightment needs our cultured touch. We make strenuous efforts to point out to them the only course of living they ought to pursue to approach to the ideals we are ever willing to place before others, but regard as a negligible quantity when they concern our own welfare. But with the examples they almost daily see of quite well-to-do folk resorting to the sort of physician who underestimates the little knowledge he possesses by altruistically sharing it with his patients free of charge, and overestimates the price of medicine, we can not hope for much in the way of earnest attention to efforts made in their behalf. Hence we are of the opinion that as long as human credulity endures, the Macaires will not be in want of a clientage, and this despite ridicule and invective. And moreover the clientage will not waver in its allegiance nor will the harsh critic of methods inviting condemnation be unvisited by the rebuttal that the patient really got, in a quantitative sense, what he paid for; and that the physician has surely the right to salve his conscience, for though his moral poise may be queer, judged by an unkind world, did he not disclose a great deal of medical knowledge to his patient without remuneration?

SOCIETY PROCEEDINGS.

ST. LOUIS SURGICAL SOCIETY.

Meeting of February 12, 1908.

Dr. Carson exhibited a specimen of cancer of the rectum.

Dr. M. B. Clopton read a paper entitled "Unilateral Dislocation of the Cervical Vertebrae," for which see page 569.

DISCUSSION.

Dr. Mudd said he had been much impressed with the simplicity of the reduction in this case. He thought it was not probable that the reduction had been completed the first time, when he had manipulated the case himself, notwithstanding Dr. Clopton's generous statements. In the diagnosis of these cases he believed the radiograph was extremely valuable; he mentioned a case, seen a number of years ago with his brother, in which the symptoms prevented a positive diagnosis but at post mortem an extensive fracture at the base was found. Had the x ray been in use at that time the diagnosis would have been made plain.

Dr. Allison called attention to one of the radiographs exhibited by Dr. Clopton, showing a dislocation at the sixth cervical vertebra; and complimented Dr. Clopton on this picture, which was a lateral view of the spinal column in this region,—a very difficult picture to obtain. Regarding the injury which produces bilateral dislocation forward in the cervical region of the spine, he said it was slight in many cases, and he believed many cases go unrecognized and perhaps live the rest of their lives under the impression that they have wry neck. Muscular contraction alone is sufficient to produce a dislocation of this character. A case is reported in the literature where an insane patient, who was confined in a straight jacket, so wrenched his head that he produced a dislocation in the cervical region of the spine and died instantly—probably from injury to the phrenic nerve. The value of the x ray, as a means of diagnosis is distinctly shown in the cases reported by the essayist.

Dr. Clopton, in closing, spoke of the ease with which reduction had been accomplished in the cases reported. He was not informed whether this was the rule in such cases, although Walton states that reduction is accomplished without difficulty when the patient is under an anesthetic and in the sitting position. There is only one case on record, reported by Ashhurst, of cervical dislocation dying at the time of reduction. While everyone speaks of the danger of reduction the speaker was unable to find any other fatal case than the one mentioned by Ashhurst, and the records seem to confirm his belief that the procedure is in reality very simple.

BOOK REVIEWS.

MEDICAL LECTURES AND APHORISMS.—By Samuel Gee, M. D. Third Edition. 8vo. Pp. viii—308. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E. C., 1908.

In looking over Dr. Gee's entertaining little volume one is struck by its general resemblance to Oliver Wendell Holmes's Medical Essays. In the same genial manner as our autocrat, he rambles about among medical odds and ends, and if he prosed more frequently than his great predecessor and is never quite so sparkling, his definite opinions and clear cut aphorisms make interesting reading. He is evidently an English physician of the old school, speaking from a lifetime of experience and close observation, though not always entirely in sympathy with modern scientific medicine. Thus in his essay on Sects in Medicine, there are for him four main medical sects: the Dogmatic, which includes most of ancient and medieval medicine; the Methodic, of which the homeopaths are striking examples; the Pharmacologic, to which modern experimental medicine tends, and the Empiric, towards which he himself most leans. He does not much believe in modern pharmacology and holds that physiology with its vivisection has contributed little if anything to practical medicine.

"When," he says, "the greatest of discoveries in medicine had been made, namely, the circulation of the blood, thoughtful men were surprised to find that no corresponding improvement in medical treatment followed. So little do therapeutics depend upon physiology. * * * Again it is not possible to predict from the operation of a drug upon the healthy body what the effect will be upon a diseased body, simply because the conditions are not the same in both cases. Obviously no experiments upon the healthy could discover that iodide of potassium is a remedy for some forms of syphilis. Lastly, physiological experiment has hitherto contributed little to practical therapeutics. Indeed its indications have been more often erroneous than not." What wonder that, with eminent physicians holding such opinions, the English anti-vivisectionists should have been so successful in their propaganda. Except for two appendices, the book concludes with 272 aphorisms, many of which are most suggestive. Among the shorter ones are:

"9. In any case of phthisis the disease is more extensive than the physical signs would seem to indicate.

"260. Predigestion of food given by the mouth is of very little value in any disease.

"271. A letter containing four pages or more, closely written and narrating the writer's own disorders, is a sure and certain sign of hypochondria."

In general, it may be said that the greater the reader's own clinical experience, the more interesting and entertaining he will probably find the book.

DIETS IN TUBERCULOSIS. PRINCIPLES AND ECONOMICS.—By Noel Dean Bardswell, M. D., M. R. C. P., F. R. S. (Edin.), and John Ellis Chapman, M. R. C. S., L. R. C. P. 8vo. Pp. viii—184. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E. C. 1908.

It may be said without exaggeration that the outlook for the consumptive has, during the past twenty-five years, been completely revolutionized. Diet and hygiene have replaced drugs in the treatment of tuberculosis and have made the home treatment of tuberculosis satisfactory to a degree undreamed of a few years ago. The best results are however still obtained in sanatoria, and it is only the great expense of sanatorium treatment to the state or the individual that prevents a wider utilization of this curative measure. The writers have investigated this problem and have found that the reason for the excessive cost of sanatorium treatment lies in the food bill. Sanatoria for tuberculosis must necessarily be lavish in their dietaries, but too frequently their lavishness is wasteful and unscientific. A careful investigation upon an extensive tuberculous material has shown that dietaries can be worked out that are ample in their nutritive value and most successful in their results and yet cost but a fraction of that usually expended for food. This can best be accomplished by reducing the amount of meat and omitting the more expensive vegetables. Adequate and successful dietaries for tuberculous patients need

cost in England only from 4s. 6d. (\$1.12) to 7s. (\$1.75) per week. For anyone interested in the management of a tuberculosis sanitarium, the book is indispensable.

PERSONAL HYGIENE IN TROPICAL AND SEMI-TROPICAL COUNTRIES. A POPULAR MANUAL, WRITTEN FOR THE USE OF FOREIGNERS IN THE PHILIPPINES, CUBA AND OTHER PORTIONS OF THE TROPICS.—By Isaac Williams Brewer, M. D. Philadelphia: F. A. Davis Co., n. d.

In a small volume that can easily be carried in the coat pocket, the author has condensed to main precautionary measures that inhabitants of the temperate zone must take to render a stay in the tropics free from danger. It is clear that housekeeping in the tropics is by no means an unmixed joy. Screens must be kept in perfect repair, vermin must be kept down, all stagnant water even in the tiniest puddles must be guarded against, all the water even that used for bathing must be boiled. Constant vigilance is here the price of health. The greatest difficulty lies in the sanitary disposal of excreta where there is no modern sewer system. Whatever method is used, the removal of the excreta must ultimately be left to native servants, and these will never carry out sanitary precautions unless constantly watched. No successful method of obviating this difficulty has as yet been discovered.

THE BLUES, SPLANCHNIC NEURASTHENIA, CAUSES AND CURE.—By Albert Abrams, A. M., M. D., F. R. M. S. 8vo. Pp. 287. Illustrated. Third Edition. New York: E. B. Treat & Co. 1908.

That the prolonged mental depression commonly known as "The Blues" is intimately associated with habitual constipation and the accompanying chronic intestinal auto-intoxication is an observation that has often been made. In his book Dr. Abrams defends this thesis in extenso and suggests a number of excellent therapeutic measures, some of them original with him. Among these the chief are abdominal and respiratory exercises, hepatic and abdominal massage, abdominal supporters, and the use of the sinusoidal current. These measures are described in sufficient detail to enable the reader to carry them out intelligently, and whoever has the persistence to wade through the book will find it rich in suggestive and practical ideas. Unfortunately these are buried in a mass of rambling discussion of matters that often have little bearing on the point at issue. The liberal use of an editorial blue pencil, reducing the book to the size of a large pamphlet, would add greatly to its incisiveness and would increase its value.

DIE BAKTERIELLEN NAHRUNGSMITTELVERGIFTUNGEN.—Von Oberstabsarzt Prof. Dr. A. Dieudonné in Muenchen. Wuerzburger Abhandlungen aus dem Gesamtgebiet der praktischen Medizin. Herausgegeben von Prof. Dr. Joh. Mueller und Prof. Dr. Otto Seifert. VIII Band. 3-4 Heft. Wuerzburg. Curt Kabitzsch (A. Stuber's Verlag). 1908.

This number of the excellent Wuerzburger series discusses concisely but adequately the bacterial diseases due to damaged or infected food. Of these the chief are the meat-poisonings due to the meat of sick animals (bac. enteritidis or bac. paratyphi), to putrified meat (bac. proteus or coli) and to sausage (bac. botulinus), the fish and oyster poisonings, that due to cheese, ice cream, preserves, and much more rarely to vegetables. The bacteriology, symptomatology and treatment is discussed in detail.

BRADYCARDIA AND TACHYCARDIA, WITH COMPLETE ENGLISH ABSTRACTS AND FOREIGN BIBLIOGRAPHY. PART II. IN A SERIES OF MONOGRAPHS ON THE SYMPTOMATOLOGY AND DIAGNOSIS OF DISORDERS OF RESPIRATION AND CIRCULATION.—By Prof. Edmund von Neusser, Professor of the Second Medical Clinic, Vienna; Associate Editor of Nothnagel's Practice of Medicine. Authorized English Translation by Andrew MacFarlane, M. D., Professor of Medical Jurisprudence and Physical Diagnosis, Albany Medical College, etc. 150 pages. Cloth, price \$1.25, prepaid. New York: E. B. Treat & Co. 1908.

Part I. of Prof. von Neusser's book, devoted to dyspnea and cyanosis, was reviewed some months ago. Part II. on bradycardia and tachycardia, the translation of which has just appeared, is conducted on the same lines. After discussing in extenso the various poisons and diseases that produce bradycardia, he takes up briefly the prognosis and treatment of this symptom. Tachycardia is handled in the same manner. In an appendix Dr. Douglas adds a bibliography with abstracts of the most important contributions to the subject in the English language.

APPLIED PHYSIOLOGY. A MANUAL SHOWING FUNCTIONS OF THE VARIOUS ORGANS IN DISEASE.—By Frederick A. Rhodes, M. D. 8vo. Pp. 206. Medical Press, Pittsburgh. 1907.

Those who desire their physiology neatly packed in small parcels for memorizing, will doubtless be pleased with Dr. Rhodes's book. The English shows a proud independence of the laws of grammar and rhetoric, the punctuation is according to rules hitherto not recognized, and the numerous typographic errors complete a harmonious whole. The proper place for the book is the wastebasket.

LE CANCER. Prophylaxie, étiologie, traitement par le docteur Sobre-Cases, médecin de l'hôpital Rawson (Buenos Aires). 8vo. Pp. 224. Paris: G. Steinheil, Editeur. 1908.

It is a pleasure to welcome so creditable a monograph from one of our South American brethren. It can hardly be said to contain anything novel, either in opinion or in experiment, but is an attempt clearly and concisely to present what seems to be of permanent value in our present views on malignant tumors. Not the least valuable portion of the treatise is the extensive bibliography appended. The author's limitations are however suggested by the observation that of the 173 references in his bibliography, one is Spanish, four English and three German, the remainder being to French publications.

PRACTICAL LIFE INSURANCE EXAMINATIONS, WITH A CHAPTER ON THE INSURANCE OF SUBSTANDARD LIVES.—By Murray Elliott Ramsey, M. D. 8vo. Pp. 231. Philadelphia and London: J. B. Lippincott Co. 1908.

The work of the insurance examiner differs essentially from that of the clinician. The latter meets those who confess themselves ill, the former those who profess themselves well. Hence even the experienced physician who undertakes insurance work may well require instruction such as Dr. Ramsey offers.

GOLDEN RULES OF DIETETICS. The General Principles and Empiric Knowledge of Human Nutrition; Analytic Tables of Foodstuffs; Diet Lists and Rules for Infant Feeding and for Feeding in Various Diseases.—By A. L. Benedict, A. M., M. D. 8vo. Pp. 407. C. V. Mosby Medical Book and Publishing Company, St. Louis. 1908.

This is a concise but reasonably complete summary of modern views in dietetics. Since much of what is best in dietetics has appeared in German and French and is not easily accessible in our language, a book such as this doubtless will supply a need.

A TEXT-BOOK OF PRACTICAL GYNECOLOGY. For Practitioners and Students.—By D. Tod Gilliam, M. D., Emeritus Professor of Gynecology in Starling-Ohio Medical College. Second, Revised Edition. Illustrated with 350 engravings, a colored frontispiece, and 13 full-page half-tone plates. 642 royal octavo pages. Extra cloth, \$4.50, net; half morocco, gilt top, \$6.00, net. Sold only by subscription. F. A. Davis Company, Publishers, Philadelphia.

This book presents gynecology in a plain and practical form. Bibliographic references or quotations from other authors are omitted. Nevertheless the book is not dogmatic; thus, e. g., in many instances various methods of operation are detailed. Progress, especially in technique, has necessitated various changes in this second edition which also has been improved by the addition of a regional index of symptoms for the use of the student and practitioner.

OBSTETRICS FOR NURSES.—By Joseph B. DeLee, M. D., Professor of Obstetrics in the Northwestern University Medical School, Chicago. Second Revised Edition. 12mo of 510 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company. Cloth, \$2.50 net.

This interesting little book undoubtedly has met with that appreciation which it so well deserves. The publication of a second edition has become necessary, and the author has taken this opportunity to improve his work by numerous changes both in the text and the illustrations.

ICONOGRAPHIE OBSTETRICALE. Par A. Ribemont-Dessaignes, Agrégé de la Faculté de Médecin de Paris, etc., etc. Masson et Cie, Editeurs. Paris. 1907.

The author of this most important contribution to obstetric literature has for the last thirty years collected colored sketches of all the anomalies he has encountered in the service of the largest maternities of Paris. These excellent

sketches will now be presented in a series of pamphlets, of which the first two have appeared. The one is devoted to the retained dead fetus, the other to fetal malformations, especially those caused by amniotic bands. Each pamphlet contains about 10 pages of text and 12 plates presenting in natural colors numerous of the most interesting and rarest specimens. This iconography will prove of incalculable value especially to all teachers of obstetrics.

DISEASES OF INFANCY AND CHILDHOOD. Their Dietetic, Hygienic and Medical Treatment. A text-book designed for Practitioners and Students in Medicine.—By Louis Fischer, M. D., Visiting Physician to the Willard Parker and Riverside Hospitals of New York City; former Instructor in Diseases of Children at the New York Post-Graduate Medical School and Hospital, etc. With 303 text illustrations, several in colors, and 27 full-page half-tone and color plates. 979 royal octavo pages. Extra cloth, \$6.50 net; half morocco, \$8.00 net. Sold only by subscription. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia, Pa.

In this age of multiplicity of text-books one must hunt for reasons for the appearance of new ones. The work under consideration deserves commendation particularly for its careful attention to detail with reference to symptomatology diagnosis, and especially as regards treatment. The author has drawn upon a large experience based upon extensive hospital and private practice. Infant feeding is considered very fully, and the various methods discussed without prejudice. The infectious diseases have a most adequate presentation. The discussion of diphtheria in its various phases covers nearly 90 pages and is an excellent resume of present day knowledge of the subject. Among the addenda of value are discussions of dietary, milk adulteration, anæsthetics in children, drug administration in children and methods of disinfection. The book is excellently illustrated.

THE CLIMATIC TREATMENT OF CHILDREN.—By Frederick L. Wachenheim, M. D., Chief of Clinic, Children's Department, Mount Sinai Hospital Dispensary, New York: Rebman Company, 1123 Broadway. Pages, 400.

This monograph really fills a vacant place in modern pediatric literature. In addition to a very great amount of detailed information with reference to the climatology of temperate North America, there is a sufficiently full discussion of health resorts, both American and foreign. A chapter devoted to the general principles of climatology and their application to childhood introduces this general consideration of the subject.

Of the special chapters, the one on the climatic management of the normal child is particularly noteworthy as presenting a model presentation of a rather difficult subject. The author takes firm ground against the general adoption of "systems of hardening" for all sorts of children, urging strict individualization with reference to hardening procedures, e. g., hydrotherapy and intentional exposure. He is inclined to think that even Hecker, who is generally heralded as the chief of conservatives in this field, is a bit too radical in some respects.

The climatic treatment of scrophulosis and tuberculosis are considered very fully; the importance of such treatment in the common surgical tuberculosis of childhood, receiving adequate attention.

The value of climatotherapy in some of the constitutional and in many of the visceral diseases is pointed out, the author's contentions being supported by the weight of authority other than his own extensive experience in many instances.

The book will surely prove of interest and value to pediatricists.

THE PANCREAS: ITS SURGERY AND PATHOLOGY.—By A. W. Mayo Robson (London) and P. J. Cammidge (London). Illustrated. Philadelphia and London: W. B. Saunders Company. 1907.

As has been said that one of the best books for a student in surgery is Osler's Practice of Medicine, so it might be equally appropriately said that for a medical man one of the best books on diseases of the pancreas is this treatise on its surgery and pathology. Not that the technical details of the operative side have been minimized, but because the main considerations in diseases of this organ are the pathology, symptoms and diagnosis, and nowhere are they more completely or more clearly put than in this volume. The embryology and anatomy, both comparative and human, are fully explained, and a large part of the work is given to the clinical diagnosis of pancreatic disorders, and the relation of the pancreas to diabetes. The "pancreatic reaction" (Cammidge) is elucidated.

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EDITORIAL.

RELIGION AND MEDICINE.

A book under the title, "Religion and Medicine,"* written by Worcester and McComb, two clergymen, and Coriat, a physician, has excited much comment, as also has the experiment upon which the book is based and upon which some of its conclusions are founded. It is difficult to determine just how to view the book,—whether as a piece of literature, as a medical treatise, or as a philosophical exposition of the problems clustering about the subjects of soul, belief, prayer, faith, religion and sin. It is not a report of the results of the treatment which the Emmanuel Church in Boston originated for the cure or betterment of nervous disorders. It certainly has no clinical appeal to medical thinkers nor does it present anything particularly striking in the psychological field. It is apparently designed to teach the public, that is, the more intelligent public, the appreciation of the fact that nervous disorders are the result of various perverted ways of living and thinking, and that they can be cured or improved by modifying the surroundings and by strengthening the moral attitude by an appeal which, in a general way, is invested in the activity of the church. It means that this activity is as much a specialized part of the church's function as is the medical advice that of the physician's, the aid of the latter in this connection forming the one unique feature of the whole experiment.

Naturally a physician turns first to the part of the book which is written by a physician. Coriat is known as a writer of prominence in the field of morbid psychology and psychotherapeutics. He has attempted to present, for popular reading, chapters on the anatomy and physiology of the nervous system, diseases of the subconscious, the nature of hypnotism, etc. It can be said of these that they are no better nor worse than such chapters usually are. The disputed points in the complex

*Religion and Medicine. Moffat, Yard & Co.

chapter of knowledge are glossed over so that an intelligent layman after reading them would think that he knew more about subjects, such as the subconscious, the problem of consciousness, the nervous system, the nature of heredity, the function of a nerve cell, the nature of hypnotism, than a well informed specialist in these departments. Coriat seldom admits that there is a doubt on many of these questions. Issue might very well be taken with Coriat's statement that hypnotism is a well recognized therapeutic procedure. There is too much difference of opinion on this subject to warrant such a conclusion as this, and it certainly seems out of place in a popular treatise. It remains to be seen if this method of treating the diseases mentioned is not followed by serious results. Coriat plainly shows here his leaning toward the position which is especially associated in this country with the work of Prince. He seems likewise to give little or no attention to some of the recent work on the subject of neurasthenia, and he has certainly no warrant at the present for giving to it the prominent place that he does. It is plain, therefore, that, as far as the medical aspect of this is concerned, it suffers from the same kind of fault that is common to popular expositions on medical subjects the world over. The chapters written by Worcester on the subconscious mind, suggestion, auto-suggestion and the cause of nervousness, form the best part of the book. There is a certain logical unity to them that makes a refreshing contrast to the rest. It is an intelligent treatment of a very complex subject, adapted to the capacity of the average well informed layman. The latter chapters of the book, which deal with such subjects as faith, prayer, the healing wonders of Christ, the outlook of the church, suicide and its prevention, etc., are written by Dr. McComb. They are in the main frankly religious; by that is meant they concern themselves less with questions of fact or the interpretation of carefully observed phenomena, than with questions concerning which a certain amount of previous belief is necessary. This previous belief is not a matter of definite quantity, so to say, which is characteristic of the scientific method and exists independently of the individual, but is the personal reaction of the individual to the questions which are touched upon. There is less place for criticism in such chapters. The subjects are handled in a rather restrained manner; a thing that merits praise as their character might excuse a much more intense method of treatment.

What shall be said of the book as a whole? The larger question which it raises is the place of religion in medicine, and the value of organized effort from the point of view of the church. The question must naturally arise,—Is the effort worth while? Are the results sufficiently good to warrant a further development of the idea? There is, further,

this thing to consider,—how much of such an attempt is an unconscious reaction against the mysticism and the false philosophy, and, let us then add, the popular success, of Christian Science? All these are vital questions and it is impossible perhaps to answer them all, or even any of them, definitely. It is difficult to adopt a satisfactory point of view. There are so many phases to the question. If the church in its feeling of hopelessness in respect to the religious appeal in the narrower sense, attempts to add to its forces a therapeutic branch in order to hold its recent recruits, the obviously utilitarian point of view is the correct one. It becomes almost a part of the new philosophy, called "pragmatism." Will it pay? Will it be useful? If so, it is true. There is in this book an almost conscious admission that there are many sincere religious people who hold this belief. Now medicine, as an art and a science, can have but little place in any such scheme of self-protection. For the moment medicine departs from the straight path of science, or rather what may be termed the scientific method, that moment it is in danger of losing its most valuable present day asset.

There is no question that religion and medicine have never mixed without both suffering; the history of medicine and its long struggle with mysticism is too well known to need further comment. The danger of this may be pointed out perhaps more clearly by considering the fact that functional diseases are functional just so long as an adequate cause and an adequate variation from the normal anatomical structure has not been discovered. Now if the therapeutic effort of the Emmanuel Church limits itself practically to the diseases which are called functional, it is clearly seen that its therapeutic activity is but a temporary shift, awaiting merely the discovery of the cause and the pathology of the disease. If, as soon as a disease becomes organic in nature, the effort ceases, then the therapy is absolutely illogical, because people suffering from organic disease are as much in need of the brightness and hope which the church brings to them as are the sufferers from purely psychical troubles. The contention is now made that a religious form of therapy must not be weakened by concerning itself with the sort of disease it attempts to treat. The decisive point is just this: People with organic diseases of the nervous system, particularly, and other sorts of chronic diseases, likewise need something decidedly more than the sort of mental therapeutics that the Emmanuel Church offers them. They need, apart from the medical side, a firm belief and a firm conviction in the very mystic power which the church, as it is now constituted in this particular instance, does not aim to supply. They need religion in the very primitive fashion; in its elemental unpsychological form, it may be said; for it is only upon some

such crude reliance that they obtain comfort. It is the purely intellectual attitude of the Emmanuel Church movement which is probably its weakest point. The very fact that the therapeutics which this movement proposes, is limited to the functional class creates an artificial distinction to which disease itself pays little or no attention. It is probably true that in cases taken by and large, the physician working on one side and the priest on the other, both coöperating as chance occurs, makes a better and more effective power. One can see and perhaps feel that in the Emmanuel Church movement there is a chance of weakening both the physician and the church. Whatever else may be said, the two look upon disease in an entirely different way, or it might be said with a different vision. It is becoming more and more evident that the biological conception of disease is the most logical. The moral conception is too evidently a growth of the medieval attitude. It seems conclusive that the church can only be a successful therapist if it adopts the old notion. No matter how it dresses itself in the nomenclature of pathology, beneath its outward scientific trappings it is still the spiritual and moral force, relying upon the power of tradition, the faith that knows no reason, and the fear of the final result. No amount of introspection or analysis, no amount of psychology, no number of formidable terms, will suppress the fact that when the human soul is tired and alone it needs the comfort which the primitive man, in common with his civilized brother, needs; he wants a feeling that there is somewhere a greater power than his which, after all, is chiefly concerned with his future and will reward or punish according to some scheme of justice beyond his comprehension. The religion which feeds his primitive need will be the final one for those that deem religion necessary. For such a religion, there is no necessity for an effort such as the Emmanuel Church is now making in the treatment of disease. Of greater interest than the question of the utility of this effort, or of its prominence, is the query which concerns itself with the interpretation of the whole movement. What it means is of greater significance than what it is and what its future will be. There is no doubt that movements of this nature can not be viewed as solitary phenomenon. While the Emmanuel Church effort is perhaps not a thing big enough to have a world significance, it represents, even in a restricted sense, a certain reaction to forces which are at work in the world at large. There is no doubt that we are in the midst of a large moral or ethical evolutionary phase. The extent and significance of this cannot be properly viewed by those in the midst of it. There is a swinging away from the materialistic point of view in the sense of some kind of yearning towards the better appreciation and understanding of the idealistic conception of things. The use of the

term "idealistic" must be explained. By this is meant not idealism in the sense of something superior and highly moral, but in the sense of its original conception that thing which is concerned chiefly with the world of ideas. The world is full of these currents. The peace movements, the efforts at civic reforms, the insistence of the higher virtues in government affairs, the prohibition movement all over the world, and, above all, the establishment of new and strange religious sects, all of which, even the crudest,—Christian Science,—mumble the half forgotten concepts of the eighteenth century idealistic philosophy. Psychotherapeutics, that remarkable awakening in medicine of the past few years, means that this stimulus has reached the sluggish current of medical thought, the last to react to world movements of any kind.

If we view, then, the Emmanuel Church therapeutics from this point of view, we will see in it a very vital thing. It is merely a part of a more universal tendency, and its importance to medicine is really of small consequence. It solves no problem of disease and it forms no new conception of therapeutics. The physicians who are a part of it are deluding themselves if they think that either medicine or religion will in the long run be influenced by it. It helps some of them to get a closer view of the human soul, but surely not closer than can be obtained by methods in use by neurologists all over the world. To many the church is an obstacle to free confession; to some it is a help. To the latter, the Emmanuel Church will appeal, or some similar institution. To the former, there will still continue to be the same grim struggle against disease, the same effort to grip the life that is inherent in them and to surrender with regret when the time is due. What Emmanuel Church is doing many a physician and nurse, and many a one who is neither, is doing the world over.

The phenomenon of life is largely an exposition of the struggle against death, and disease is but the definite mechanism by which death is always victorious. All efforts to increase the resistance of the living, to increase the power to combat disease and to add to the delight in normal thinking and acting, should be upheld. If the Emmanuel Church does this it is a good thing. An admission of this does not emphasize its importance. That is the main contention of these paragraphs.

ANNUAL ORATIONS AND ADDRESSES.

The pride that comes to one who has the honor of being selected from the mass of his professional brethren to deliver an annual oration or an annual address, must of necessity be tinged with a sense of self-sacrifice and impending gloom. For we who listen to the chosen orators of our profession compose a critical audience which is all too apt to treat in a superficial way the focused thoughts of a year's hard work, and too ready to condemn or praise the orator from the impression which he has produced upon us in an intensely crowded and hot auditorium. Several facts enhance this critical attitude: That association meetings are held in summer weather; that so much is being read and spoken that one gets saturated by simply listening; and that an annual address or oration is, as a rule, a very serious consideration, in a lengthy manner, of some very important subject. To the average listener the annual address as delivered carries but little weight. The average reader, however, gains much by a careful perusal of this painstaking and prepared essay. An editorial abstract, indeed, contains much food for thought. This seems particularly to be the case this year, some addresses having been delivered which are worthy of several readings and much careful consideration. These essays might be spoken of, to borrow a political phrase, as *key-notes* of our present position.

First among these essays is that of Dr. Charles Harrington, on "State's Rights and National Health;" an essay developed in clear and forcible English and carrying its message to Garcia. One can not be too seriously impressed with the thought developed by Dr. Harrington, that we are an unscrupulously commercial people; a people unaccountably blind to the pecuniary loss suffered annually through sickness and death due to preventable disease; but, nevertheless, a people acutely awake when disease threatens our animals or plants. He points out clearly that a yellow fever outbreak, such as that of 1905 in New Orleans, does not cause the national government to loosen its purse strings, while an outbreak of animal disease, such as epizootic, or foot, or mouth disease, will be met with the expenditure of perhaps a million dollars. Dr. Harrington, however, is not simply fault-finding, but recommends to the consideration of each medical man throughout the United States, the establishment of a medical board of health; a body composed of men of recognized standing in medicine, engineering or other branches of science that will be of assistance, called together once a year by the head of the bureau to consult and advise about health matters; in fact, composing a council of delegates, one from each state appointed for a term of years by the Governor or State Board of Health

Well may Dr. Harrington ask, does the profession in general perform its whole duty to the community when it fails to show any concern about who shall be the representatives of preventive medicine? Well may he change the substantive of Matthew, x, 31, "Fear ye not therefore, ye are of more value than many swine."

The national government is proverbially stingy in the question of salary, and to its liberality on the question of rewards for splendid service, let the ghosts of Reed, Carroll and Lazear rise and tell. All this must be changed in time, and it seems that the medical profession is asleep on its own rights.

The annual address of the President of the American Medical Association, Dr. Herbert L. Burrell, strikes the key note of public education as a means toward aiding scientific medicine. He points out that the public have amassed much knowledge of disease which is indeed in a chaotic condition due to the indiscriminate way that articles upon medicine are dosed out by the lay press to a demanding and vitally interested audience. The idea enthroned in this address is that the tendency of the age makes it necessary for the medical profession to give out at first hand from authoritative sources, such facts of medical science as have become established so that the laity may be in a position to understand the advantage of the general movements toward sanitary legislation and preventive medicine.

Dr. William Sidney Thayer has also struck this note in his oration on medicine. He says: "Here we are, then, a great body of medical men, united in an association, not for our personal, financial, political or social advancement, but solely in the cause of truth and for the benefit of humanity,—the deliverance of the public from disease. Nevertheless, the work before us is unending, the obstacles great. But why should there be obstacles? Why have not the recommendations of this association the force of law? Why is it that, when laws themselves exist, all our strength is needed to secure their enforcement?"

The main cause, I take it, of all this is the lack of comprehension on the part of the public of the nature and aims of medicine, and of physicians. If the public had but a small part of the information which is ours, how many thousands of lives might be saved every year! The community as a whole has a very vague understanding of the nature of the medical sciences and arts. Under these circumstances can we expect such a public to sympathize with and blindly follow all our recommendations? Surely not."

Dr. Thayer also points out that the physician has no higher public duty than the duty of simplicity, the duty of avoidance of mystery in medicine and the duty of truthfulness; these three bearing much influence on what the physician shall be able to teach his non-medical friends.

At no time in the history of the American Medical Association have addresses of this nature been so pregnant of meaning, and it is imperative that they should not be cast aside with merely a glance, as is too often the case with lengthy addresses; and that each of us should endeavor to follow the thought contained, and apply the knowledge so compactly given to our daily efforts in seeking the general advancement of our work as medical men.

THE MEDICAL VIEW OF ANARCHY AND SOCIALISM.

The psychology of anarchy must receive more publicity. Every little while there is an effort to enact laws to eradicate it, but they are more like purposeless spasms, for they have been barren of results. Failure seems to be due to the fact that legislators do not understand what it is they are dealing with, though to the psychologist the matter should be as clear as daylight. The doctrines of the anarchist are so amazingly illogical that it is quite evident his brain is far from the normal. It is not necessarily a small or feeble brain and the condition is therefore not allied to idiocy, imbecility or feeble-mindedness. Nor indeed is insanity present for there is positively no evidence of disease such as is found in the case of paranoia, but it is allied to that disease as it is a degenerative condition. Like paranoiacs, anarchists are often very active and keen mentally but they differ in this, that whereas the paranoiac may reason logically on his false ideas or delusions as premises, the anarchist reasons illogically upon well established facts. Insane brains may be badly deranged in function but such degenerate ones are badly arranged in material.

"Scientific Anarchy" has been quite extensively written up by Kropotkin who has enriched science in many ways but it is a matter of extreme regret that he should use the word anarchy now that degenerate assassins have appropriated it. The word was adopted by democratic revolutionists who were oppressed by an unduly severe government. They fought for the rights of men as opposed to the rights of the group of men called the social organism. The two sets of rights are somewhat antagonistic for though society has evolved to preserve the greatest number it sometimes calls for the death of many of its members. In war many must die that the rest may live and the rights of the individual to life itself practically disappear, but in peace those rights are enhanced to the highest degree, as the preservation of life is the reason for the existence of society. Kropotkin describes the rights of man but makes the amazingly unscientific mistake of considering those rights so su-

premise that any check upon them is tyranny of the mass, whereas it is an axiom that personal liberty is limited when it injures some other person's liberty or hampers the efforts of the mass to preserve the greatest number. In his view and that of the original anarchists the mass had no rights as a mass and "government" or the agent of the mass for their preservation was pure tyranny. Of course it is all absurd though the most natural thing in the world to arise where "government" had gotten into the hands of a few who used it more for their own advantage than for that of the mass. The same oppression existed in American colonial days, but anarchy was not preached. Our revolution was a struggle for a government which would bear upon all alike, not for abolition of government without which society melts and the units kill themselves off as in prehistoric days. We must be protected against ourselves.

Assassination of governmental agents was assumed by the illogical anarchists to be the best means of ending oppression, wholly ignoring the facts that these are merely agents of the mass and that without their protection even the anarchists themselves would die. After the very act of killing the police, they demand the protection of other police. After denouncing courts they throw themselves upon the courts for protection. Their literature is so full of other vagaries, inconsistencies and illogical reasonings that there is not the slightest doubt of mental abnormality of sufficient degree to warrant confinement in asylums. Whether those who preach murder should not be executed is of course open to debate, but that they should be removed from society in some way is self evident. It is a matter in which psychologists might do a world of good by more frequent discussions of degenerate or warped minds,—to the end that legislators may find a way of removing anarchists from the possibility of doing further harm. McKinley was killed by one of these perfectly sane but warped degenerates, and of the hundreds of propositions to curb them, not one has been practical and nothing has been accomplished. The medical profession must lead the way and the need is urgent.

Socialism need not bother us very much, for though it is the very opposite of anarchy and just as unscientific, it is being used as an instrument for lessening disease and its workers can be encouraged in their efforts to benefit the least efficient. Socialism really advocates an enormous extension of the powers of government wherein all are to be treated as though there was perfect equality. Society is assuming family duties so greatly that we are becoming more and more socialistic every decade—public schools in place of home instruction, kindergartens instead of home nursing, trade schools instead of private apprenticeships, and boards of health to enforce all manner of things, but the ideal of abso-

lute equality and the prevention of exceptional rewards to exceptional men is quixotic as it ignores the fact that society exists simply because each unit struggles for what his ability permits. Nevertheless, the medical profession is brought into such close relations with the practical sanitary and benevolent works of socialists that we might admit some good in it though it does immense harm by stirring up discontent with one's congenital defects, and for this reason it has unfortunately been made the host of anarchistic parasites, and it would be best to drop the agitation. In Germany it is merely a cry of the undemocratic masses for greater paternalism of government, and we have it here under other names in every political campaign, the word socialism being unnecessary. The individualism of England will not tolerate it, though it is growing to an extent which must be reckoned with. There is a possibility that medical attendance when sick will be declared a duty of society and physicians might become public officials. The dispensary evil has gone a great way in that socialistic direction, and in England there are many observers who are quite convinced that in time, there will be as few private physicians as there are private pedagogs. Nevertheless socialism though coming quite close to all classes as well as physicians, is so unscientific in its ultimate ideals, and so misused by the degenerate, that it might as well be dropped for good and all.

LODGE PRACTICE.

Contract practice seems destined to loom up as large in American industrial centers as it has in English cities. It appears from a paper by Dr. Julius Weiss (*Med. Rec.*, April 11, 1908) that almost 75 per cent. of the East Siders of New York City are insured for medical attendance in lodges or societies. The result is an unbecoming competition on the part of young physicians who have not yet established a practice or who have failed. The evils are self evident, but it is not at all unlikely that they will correct themselves in time. The British Medical Association investigated the matter quite extensively some years ago, and the general impression subsequently gained is to the effect that the evils are not as great as at first supposed. One thing was quite clearly brought out and that was the fact that the sick got just about what they paid for and no more. A person intelligent enough to provide for the future is quite apt to wish to select his own physician when sick, and not depend upon the lodge doctor. In time they seem to feel that it was better to employ those whom they wanted, and as far as we know they show a tendency to withdraw from the associations. Of course there is a gambling element in it, for they feel that they are apt to get some-

thing of great value for a small outlay, and it is this possibility of insurance which attracts them in such large numbers at first. No doubt it would be better to put the money in a savings bank than in a policy shop, but that is expecting too much of human nature. The tremendous advantage of the system is the fact that the poor feel that they are getting what they paid for, and there is a total absence of the pauperizing tendency of the old style free dispensary—still too numerous with us. If all people felt that it is society's duty to care for them when sick, then physicians will become public officials, like teachers, but that state is too far off to be more than a subject for academic discussion. At present, free medical care has a degrading, pauperizing effect, and the victims will not look out for themselves. Lodge practice is a distinct advance and as it is apparently with us to stay, it must be reckoned with. It will probably not become any more extensive than in England, for the lodge members, as they become better off, will prefer to select their own family doctors and pay for the advice as they pay for anything else they want. All such matters are governed by the natural laws of supply and demand and it is not quite certain that unionism methods urged upon physicians will alter the conditions in the slightest degree.

LITERARY NOTES.

Pierre Pic is a Frenchman who has ingratiated himself with his countrymen on more than one occasion by editing rare editions of works bearing on medicine, in which is illustrated the true Gallic spirit. In his new book, "*Pilules apératives à l'extrait de Montaigne, préparées ad usum medici*" (Aperative Pills made of the Extract of Montaigne, prepared for the Use of Doctors) he not only evinces a deep knowledge of the incomparable essayist's works but a veneration which can easily be construed into the sort of affection which makes even a temporary separation from a favorite author's works a real disaster. That Pierre Pic has found in Montaigne's works many passages of more than ordinary interest for the medical world is explained in a witty fashion in the preface, from which we quote the following: "These pills are not in any way the same as the pills in the French codex nor are they applicable to all temperaments; their size varies; their dosage can not be regulated. Certain ones are such large boluses that it must needs be a strong stomach to make deglutition possible where bitterness is so thoroughly undisguised. Assuredly, their taste savors more of aloes than of powdered licorice."

Montaigne is without doubt an old friend of many members of the medical profession—the sort of companion one gives up reluctantly, so varied are his talents. This is not surprising, for of all the older writers he is the most modern; in fact, his mentality is even to-day, akin to our own. Again what author in the whole range of French literature displays a similar ingenuity and originality of thought—qualities which hold us constantly in thrall. Knowing Montaigne fairly well it is with con-

siderable delight that we open this new book filled with excerpts, for not only are the selections of the best, but their arrangement is admirable; and moreover, the convenience of finding the aphorisms which we have half-forgotten without the trouble of resorting to the original works, can not be overestimated. When we recollect how pithy, acrimonious and mordant Montaigne's sentences are, we feel no hesitancy in recommending them to all doctors who, on account of many medical experiences, have envisaged life in all its many phases.

That baffling, picturesque and romantic figure in literature, Lafcadio Hearn, is the subject of a sympathetic interpretation in Dr. Geo. M. Gould's new book "Concerning Lafcadio Hearn" (Philadelphia: George W. Jacobs & Co.). Seldom, indeed, has a writer of Hearn's well-known peculiarities received kinder treatment, for not only does Dr. Gould bring to bear on the matter a mind instinct with latitude and justness, but his critical sense stands him in good stead in dwarfing as far as possible the glaring defects in the man's make-up, so that the high literary values of his work stand out with prominence. Whether it was Hearn's unhappy youth, his direful experiences in Cincinnati—direful because of his poverty and an environment uncongenial to his exuberant and poetic imagination, his extreme myopia (this according to Dr. Gould), or the confounding of the Irish and Greek strains in his being that must be held accountable for his vagaries, we are not in a position to say; but the fact remains that as a personality he was as unattractive as he was fascinating as a writer. Ingratitude writ large dominated all those qualities which make for the amenities of life, and that Dr. Gould can throw the mantle of charity over so great a blemish, though he himself was the recipient of treatment quite despicable, speaks well for his forbearance. Fortunately, the book is not all about Hearn himself, but—and here Dr. Gould's critical sense comes in—an excellent interpretation of Hearn's unusual mind and the spirit which informs his work. The chapter "Getting a Soul," shows us distinctly that though Hearn did good work in New Orleans and later in the French West Indies, it was not until he went to Japan—and this by the way he did at Dr. Gould's suggestion—that he really found himself: that is tore himself away from certain French writers whose influence had been an obsession, and wrote according to the dictates of his unbiased original mind. Students who are interested in all the quiet but, at the same time, potent forces which underlie the social fabric of a nation, should not neglect Hearn's books on Japan, for they are both instructive and illuminating. Dr. Gould's book, while candid to a degree that might shock our literary Philistines, is a manly performance and superior in every sense to Elizabeth Bisland's "Life and Letters," in so far as we are not only brought face to face with Hearn himself, with his high lights and low dim ones, but get an insight into the workings of his extraordinary mind and an excellent interpretation of his works.

ORIGINAL ARTICLES.

FOREIGN BODIES IN THE ABDOMINAL CAVITY.*

By H. S. CROSSEN, M. D., of St. Louis.

Whenever the dangers of abdominal section are mentioned, the mind naturally reverts to hemorrhage, to sepsis, to shock or to the failure of one of the vital organs under the post-operative strain. In all these directions great strides have been made in recent years toward effective preventive measures.

I call attention now, however, to an accident fully as serious as those just mentioned and yet one in which the preventive technique usually employed remains as ineffective as it was ten years ago. I refer to the leaving of sponges and forceps in the abdominal cavity.

To one not familiar with the subject it seems past belief that we would carry into the abdominal cavity any object, the removal of which is not provided for with absolute certainty. And yet, that such is the case is abundantly proven by the long list of cases in which sponges, forceps and sundry other articles have been removed from the abdomen, during convalescence or at the post-mortem table. Many cases have been reported, and there are many more cases that have not been reported, since, for obvious reasons, the accident is not given publicity unless there is some special reason for doing so. In any large body of surgeons, a little experience meeting in which testimonials are freely given, will show a number of cases in which this serious accident has occurred.

Of the reported cases in which a foreign body was left in the abdomen, the largest series that has come to my notice is that collected by Schachner. In an excellent article,¹ he reviews the 109 cases collected by Neugebauer and adds 46, making a total of 155. In about 70 per cent. of the cases, the foreign body left was a sponge or sponges, in 25 per cent. artery forceps, and in the remaining 5 per cent. drainage tubes, and finger rings and miscellaneous articles. Death resulted in approximately 40 per cent. of the cases.

SPONGES.

A gauze sponge or pad is the article most frequently left. Concerning this there are three questions which I shall consider briefly; (1) how does the accident occur; (2) what are its consequences; and (3) how may the accident be made impossible?

*Read before the St. Louis Medical Society, February 15, 1908.

¹Annals of Surgery, 1901, Vol. 34, pp. 499 and 678.

How does the accident occur? It is surprising how easily and quickly the intestinal coils will enfold an object and carry it out of sight and touch.

Perhaps the most common occasion of the leaving of a sponge in the abdomen is some condition that necessitates hurry in the closing steps of the operation. The patient is weak and failing and, consequently, very rapid completion of the operation is imperative. Some persons may think that even in such cases the accident is due to inexcusable carelessness. Such a view of the matter may seem very plausible to the inexperienced, but its erroneousness is painfully evident to those who have had personal experience in desperate abdominal cases, where the patient is wavering between life and death and a few moments delay may turn the balance. As the wound is being hurriedly closed, that the patient may be gotten into the warm bed and various restorative measures used, it is found in the counting that a sponge is missing. Where is it? Is it in the abdomen or is it in some of the various rolls of things about the table or in the waste container or on the floor. To search the peritoneal cavity again or to delay the closing of the abdomen until everything around the table is thoroughly searched, may cause the death of the patient, while to close the abdomen with the possibility that a pad or sponge is in there, is not less dangerous. This makes a most uncomfortable situation and one all too frequent.

Another occasion of this accident is in operating with unfamiliar assistants or nurses. Not knowing certainly the operator's custom, each one supposes some one else is keeping responsible watch of the sponges. Consequently the exact number put into the abdomen and taken out, is not closely watched, and the general counting may be neglected until the abdomen is closed. Again, the sponges may be dropped about so carelessly, by unfamiliar assistants, that an accurate count can not be made promptly as the wound is being closed.

A third cause of this accident is a mistake in the number of sponges used. This may be made by the nurse preparing the sponges (an extra one or two being included in the set), or it may be due to the addition of one or two during the course of the operation, because of some pressing need. For example, in a recorded case, the operator called for another sponge. All the regular sponges having been used, the nurse hastily secured an extra one from the sterilizer and gave it to the operator. In the hurry, the fact that an extra sponge was in use was overlooked. At the close of the operation, the number of sponges tallied with the regular set. Several hours later the operator was informed that a sponge was missing. He replied that that was impossible as he used only a certain number and the set was complete at the close of the operation. He was then told that an extra sponge had been used and that it could nowhere be found. The abdomen was then reopened and the sponge was found up under the liver.

A fourth cause of the accident is a mistake in the final counting. The

prompt getting together and accurate counting of the two or three dozen sponges and pads, as the abdomen is being rapidly closed, is not such an easy task as might at first appear. A sponge is not infrequently reported missing and then, after a long search, is found somewhere about the table. On the other hand, the number may be pronounced complete and yet later, one be found missing. It is useless to say that this should not occur. The fact remains that it does occur and, under the varied circumstances of operative work, it will continue to occur as long as dependence is placed on the counting.

An esteemed confrere, whom we all know to be one of the most careful of men, has reported cases forcibly illustrating each of the two points just mentioned. In one case a sponge was reported missing and twenty minutes were spent in hunting for it before closing the abdomen, when it was finally found on the table after all. In another case, the number of sponges was reported "correct," and the abdomen was closed. An hour later an assistant, a conscientious and painstaking gentleman, said to him, "Doctor, I have counted the sponges again since the patient was put to bed and I miss a sponge. I think I counted them correctly before the operation." Three sutures were removed from the recent wound so that two fingers could be introduced into the cavity and, after fifteen minutes search, the sponge was found and removed.

What are the consequences of this accident? 1. Prompt discovery that a sponge is missing and reopening of the wound and removal of the sponge. When this has been accomplished within a few hours after the operation, recovery without serious consequences from the accident is the rule, though of course the secondary opening of the cavity adds considerably to the danger of the operation.

2. Peritonitis and death. Even though sterile, a large foreign body in the peritoneal cavity, following a severe operation, may invite the localization of bacteria with resulting peritonitis. If a post-mortem examination is held, the sponge is found. If there is no post-mortem examination, the death is supposed to be due to ordinary peritonitis. Patients have no doubt died from this condition without the true cause of death ever having been surmised. In a series of 29 reported cases in which complete data were given, in two cases the sponge was missed before the abdomen was closed and was searched for and found, in six cases it was found by reopening the wound at a period varying from a short time after operation up to four days after, and in twenty-one cases the sponge was found on post-mortem examination.

3. Walling-off of the sponge, with gradual extrusion toward the surface of the body. A strong wall of adhesions is thrown out around the sponge and this localizes any inflammation resulting from it. An abscess may form about the sponge or the region may show only chronic irritation without pus. Because of persistent disturbance in the vicinity of a drainage opening or elsewhere about the incision, an investigation is made and the sponge discovered and removed—a few days to a few weeks following operation.

4. Walling-off and gradual extrusion from the peritoneal cavity into some hollow organ, usually the intestinal tract. The penetration through the intestinal wall may be effected by inflammatory ulceration from an abscess about the sponge, or it may be effected by pressure atrophy, or it may be due to a combination of these effects. This extrusion by way of the intestinal tract may take place rapidly or slowly. In one recorded case the sponge passed spontaneously twelve years after the operation. After the sponge has completed its gradual transition into the intestinal canal, the tract which it occupied may gradually contract and close by granulation without further trouble. On the other hand, the tract may remain as a pus pocket or a fistula into which fecal material escapes and which finally requires operative treatment.

5. Complete encysting of the sponge. Sterile bodies of even large size may become surrounded by adhesions and remain in the peritoneal cavity indefinitely. It seems to me that the word "encysted" does not exactly express the condition, as there is not necessarily a distinct capsule, but a better word has not occurred to me. The sponge really lies in a mass of granulation tissue which penetrates it in all directions and shades off gradually into the surrounding structures.

Von Bunker, quoted by Schachner, conducted some experiments to determine just what changes took place in this disposition of sponges left in the abdomen. He experimented with sterile sponges soaked in turpentine. Within a few hours the sponge was surrounded with fibrin, which shut it off from the general peritoneal cavity and also filled the spaces of the sponge itself. Gradually leucocytes extended throughout the fibrin, and later granulation tissue penetrated all through the sponge, so that it became imbedded in granulation tissue, which gradually shaded off into the surrounding tissues "without any sharp dividing line." Phagocytes set to work disintegrating the foreign body and removing it piecemeal. Several instances are reported in which sponges, left in the abdomen several years, had largely disappeared by phagocytosis.

Of course this comparatively innocuous disposition of the sponge occurs in only a very small proportion of cases. In most cases in which a sponge is left in the abdomen serious symptoms probably develop sooner or later, causing the patient's death or necessitating a secondary operation.

How may the accident be made impossible? This is the most important question of all, and it is one to which I have given considerable study. Following the usual technique, I operated for years without accident. But about two and a half years ago I left a gauze pad in the abdomen. It was a pus case in which extensive drainage was necessary and, fortunately, the pad was discovered and extracted through the drainage wound. The patient recovered without serious result from the accident, but the lesson was not lost. I determined to find some method that would really prevent such an accident—a method that would be entirely under control of the operator and first assistant (a greater division

of responsibility increases the danger) and one that would occasion no delay in the closing steps of the operation.

There had to be taken into consideration the large pads, for holding the intestines out of the way, and the small pads and gauze pieces for sponging.

In place of the several large pads for packing back the intestines, I adopted the large roll of gauze, then already in use by a number of operators, and found it entirely satisfactory.

The matter of the small pads and sponges, however, was not so easily disposed of. I felt that it was imperative to find some method that would do away entirely with dependence on the counting of the sponges at the close of the operation. As long as there was dependence on counting of the numerous small pads and sponges, there would be mistakes, and consequently sponges would occasionally be left in the cavity.

To eliminate this hazardous dependence on counting and to provide a method that would make the leaving of a sponge in the abdomen practically impossible, was not an easy task. I worked over the problem for the greater part of a year. I tried various methods in common use for keeping track of the small pads and sponges, such as clamping an artery forceps to a tape attached to each sponge, attaching a heavy ring to each tape before sterilization, clamping each tape or a corner of each sponge to the sterile sheet about the wound, etc. But I found no such method that was convenient and absolutely safe.

It then became evident to me that if safety were to be secured, the detached pads and sponges must be eliminated entirely. In pursuance of that idea I devised the method published in detail last September.¹

The underlying principle of this method is that no detached piece of gauze shall enter the abdominal cavity. Each piece of gauze introduced is simply part of a very long piece, the greater part of which is always outside the cavity.

I use long folded strips of gauze, each strip packed in a small cloth bag in such a way that it can be pulled out a little at a time as needed. I have used the strips systematically in place of all small pads and sponges. So far as I know the method is original, no description of such use having come to my notice. The nearest approach to it that I have come across, is the recommendation of some writers that a part of every abdominal pad and sponge should always be kept outside the cavity. For some years the large roll of gauze for packing back the intestines has been used by many operators, also gauze strips of various widths and lengths (including five-yard and ten-yard lengths) have been in general use in abdominal surgery for tamponade to check bleeding. But that is very different from the method here detailed of using long strips systematically so as to eliminate all detached pads and sponges.

It is the packing of each long strip into a bag that makes this use of

¹Interstate Medical Journal, Vol. XIV., No. 9. In that article the method is fully illustrated.

strip-gauze practical and convenient. The small cloth bag confines the long strip in a small space so it is not in the way.

Each strip consists of a piece of gauze ten yards long and a half a yard wide. This is folded lengthwise so as to make six thicknesses. The folded strip is approximately three inches wide and ten yards long, with the raw edges turned in and the ends tacked with thread to keep it from unfolding. Each bag is five inches wide and ten inches deep, and is preferably made of extra heavy material and is sewed in such a way that there is no chance for a raveling to be pulled out with the gauze.

Beginning with one end, the gauze strip is packed firmly, a little at a time, into the bag. When packed in in this way it comes out readily, a little at a time, as pulled out. When the end of the strip is introduced to the bottom of the bag, it is well to fasten it firmly there by stitching through and through, so that if by any possibility the whole strip should be packed into the abdomen (to check a sudden severe hemorrhage or for other reason, the end would still remain securely fastened outside. When all the strip has been packed into the bag the top of the bag is closed by folding over and is pinned with a large safety pin. Another large safety pin is also attached to the bottom of the bag. Four of these filled bags, constituting one set, are wrapped together in a cloth and are then ready for sterilization.

Beside the operating table, they are placed in a dry basin, close to the basin containing the gauze roll in normal saline solution.

At the operation, the lower end and upper end of the bag are pinned to the sterile sheet, a sufficient distance away to bring the mouth of the bag conveniently near the wound but not in the way. The gauze strip is used as a sponge by catching a small part of it with the fingers or with forceps and pulling it out of the bag as required and then sponging in the abdomen. After use, this part is dropped away from the wound and another small part is drawn out and used. The used part is *not* cut off but simply dropped outside the operative field and, as more and more of the strip is used, this soiled part falls off the table and out of the way. Thus the greater part of the strip is always outside the abdominal cavity. No detached pieces of gauze are used in the cavity, and hence none can be left there.

Usually two strips, one placed on each side at the beginning of the operation, are used in the course of an ordinary abdominal section. In cases where there is but little sponging, only one strip is needed. In very extensive operations where an extra amount of sponging is required, three or four strips may be needed. In no case did I find it necessary to use more gauze than that contained in one set, though I always have an extra set sterilized and ready for use. I tried different lengths and widths of strips, and prefer the size here given.

For sponging I use these strips exclusively from the time the skin is incised until the peritoneal cavity is closed. At first I anticipated con-

siderable tangling of the gauze strips about the forceps in the wound, but found that this could be easily avoided by always dropping the soiled portion of the strip outside the field *close to the bag*. This prevents the accumulation of loose folds about the wound, with which the instruments may become entangled.

Having used this method now for a year and a half, in various kinds of abdominal cases and under differing environments, I feel justified in recommending it as safe, practical and convenient. Combined with the use of the large roll of gauze for packing the intestines away, it simplifies the matter of pads and sponges for abdominal section and eliminates entirely the chance of leaving a piece of gauze in the abdomen.

Special points. Before passing to the consideration of instruments left in the abdomen, it will be profitable, I think, to take up briefly some special points in regard to the use of the gauze-strip sponges and some possible criticisms that have been brought out in my study of the subject or in questions asked me by surgeons contemplating the use of the method.

In the first place the object of this method is not convenience, but *safety*. Its existence depends solely upon the desire to eliminate every chance of leaving a piece of gauze in the abdomen. Incidentally, I have developed the method in such a way that it is convenient—in some particulars more convenient than the ordinary detached sponges. But this convenience is only incidental.

I call particular attention to this point for the reason that the simplicity of the method and its convenience in certain particulars (ease of preparation, compactness, sponge always within reach of both operator and assistant), have caused some to jump to the conclusion that its simplicity and convenience constitute the reason for its promulgation. That is a mistake. The time and study required for the development of this method, were given only because of the pressing necessity of finding some universally applicable method that would make practically impossible the serious accident of leaving a sponge in the peritoneal cavity. The pads and sponges commonly used in abdominal work are fairly convenient. On that score no decided objection can be laid against them—certainly none of sufficient weight to justify the radical change here contemplated from the long-tried and generally employed technique of abdominal surgery.

The fatal drawback to the ordinary pads and sponges is the danger of one being left behind. If this were only a theoretical danger, I would not take your time considering it. But facts previously given show that many lives have been sacrificed and are still being sacrificed by this accident. Think of a series of 155 reported cases in which it was recognized that a foreign body had been left in the abdomen—about 70 per cent. being sponges. This undoubtedly represents only a small proportion of the recognized cases, being made up from reports of the work of comparatively few surgeons and those the more prominent and ex-

perienced ones, i. e. the ones with whom the accident is least likely to occur. The bulk of the recognized cases are probably never reported, for the accident would naturally be kept quiet unless there were some special reason for reporting it. Again, think of the cases that are not only not reported but that are never even recognized. The patient dies with evidence of peritonitis, there is no suspicion of anything unusual, no post-mortem examination is made and the death is supposed to be due to ordinary peritonitis. The possibilities in this direction are indicated by the fact, previously mentioned, that in a series of 29 cases, in which complete data are given, in 21 of the cases the accident was recognized only on post-mortem examination, when the sponge was found.

Of course, where a surgeon always operates in the same hospital with the same assistants and to a large extent with the same nurses month after month, the danger is reduced to a minimum, because of the establishment of a routine from which there is almost no departure. Even under these circumstances, however, the danger is not entirely eliminated. And what of the great bulk of surgical work, where the operator works at different hospitals, with different nurses and in some cases with changing assistants? Furthermore, the progress of the operation is not always smooth and regular. Abdominal surgery is notably full of uncertainties and unlooked-for developments and trying situations, that break the routine of the best regulated institutions and tax to the utmost the ability and steadiness and attention of all concerned in the operation. How easy it is for a slip to occur under these conditions. And, still further, think of the emergency work, in unsuitable environment and with untrained assistants. In estimating the possibility of this accident, all these conditions must be taken into consideration. Likewise, all these conditions had to be considered in devising a method for preventing the accident. To be worthy of general use the method must be absolutely safe under all these varied conditions.

Hitherto there has not been a method, practically applicable in all the vicissitudes of abdominal surgery, which would absolutely prevent this accident. In spite of widespread interest in this subject in recent years and of considerable study and investigation of it and several excellent papers by different authorities, there has been no signal advance. Ten years ago operators were using the same preventative measures now commonly employed. The sponges were counted, tapes were attached to the sponges that were counted, forceps were attached to the tapes that were attached to the sponges that were counted, etc., etc. Yet with all these complicated precautions, many sponges were still left in the cavity as the records show. In fact in one reported case the sponge, tape, forceps and all were lost in the abdomen, indicating the uncertainty of that method.

I feel now, however, that we have a really safe method, in the simple and convenient one here detailed. I did not arrive at this conclusion hastily but tried the method a full year and under various circumstances,

before recommending it. I have used it now for a year and a half as the routine and only method in various classes of abdominal-section cases and in differing environment, and the longer I use it the better I like it. Even if it were decidedly less convenient than the regular pads and sponges, I should consider its use imperative because of its safety. The greater part of the strip is always outside the abdomen and if, by any possibility, the whole strip, ten yards in length, should be hastily packed into the abdomen to check oozing, the end would still remain out, for it is fastened securely to the bag and the bag to the sterile sheet. I do not see how there is any practical possibility of a piece of gauze being left in the abdomen, even in the most trying case and with wholly untrained assistants. The hazardous dependence on the final counting, or on watching what goes in and what comes out of the cavity, is entirely eliminated.

In this connection I wish to call attention to a rule which should be most strictly observed, viz., *never cut a gauze-strip sponge in the course of an operation*. The temptation to cut the strip comes not infrequently, because in certain situations it makes the sponging somewhat more convenient. In some situations the cutting would of course not be dangerous, as when part of the strip outside is cut off and allowed to drop away. On the other hand, in other situations the cutting of the strip might lead to a portion being left, as when a part is used for temporary packing and then the strip is cut in order to sponge more conveniently with the remainder. Whenever a cut is made in one situation for any reason, the rule is broken, and then a cut is likely to be made on the spur of the moment in any other situation where it appears to increase the convenience—and thus absolute security is lost. The only safe plan is to adhere strictly to the rule never to cut a strip during the course of an operation. Of course, if at the close of an operation it is desired to use part of a strip for permanent packing or drainage, that is a different proposition.

Another question that has been put to me, is as to the size of the strips. I experimented with different sizes. Those used at first were much narrower. When such a narrow strip is wet with blood it becomes like a ribbon—not enough substance in it to sponge well. Of the various sizes tried, I found ten yard strips, half a yard wide, the most convenient. Folded as indicated such a strip is narrow enough for use when a very small sponge is required, while on the other hand several folds caught in the forceps, furnish the substance for a large sponge. Also, it can be easily spread out sufficiently to wall-off an object with sheet-gauze, as, for example, in surrounding the region of the appendix when that structure is to be removed. When the gauze used in making the strips is extraordinarily thin, the width should be doubled.

I have been asked about the cost of this method. Preventing, as it does, one of the serious accidents of abdominal surgery, it is cheap at any price. Even though its use cost several times as much as the dangerous

detached sponges, that would not constitute a valid objection. As a matter of fact, however, it costs no more than the usual method—if any difference, the cost is somewhat less. In order to get definite information on this point, I ascertained the amount of gauze generally used in an ordinary abdominal section in each of four of our leading hospitals. Though the number and size of the pads and sponges differed greatly in the different institutions, there was a striking uniformity in the amount of gauze consumed in an ordinary abdominal section—averaging 20 to 25 yards in each institution. The amount ordinarily used in the method which I have detailed is 15 yards—the 5 yard roll for packing back the intestines and 10 yards in the two gauze strips in bags. In severe cases the third gauze strip is used. I do not recall a case in which I have had to use more gauze than this, but even if the whole set were used, it would not run over the amount consumed by the usual method.

I have been asked if the strip extending from the forceps to the bag is not in the way when sponging? Sometimes it is to a slight extent, but not as much as would at first appear. Any new method seems somewhat awkward at first and this is no exception to the rule. However, in my experience so far, I have not found any situation in which there was serious interference with satisfactory sponging or with any other operative manipulation. Like any other important step in technique, it should be studied until it is clearly understood before an attempt is made to use it. There are two particular points that may be mentioned. To prevent the accumulation of loose folds of gauze in the vicinity of the wound, with consequent entangling of the instruments, the used portion of the strip should always be dropped outside the field but close to the bag. Again, when taking hold of a fold, to sponge with, draw it out of the bag for some distance, so that it can be introduced into the abdomen as far as desired freely and without tension.

I have been asked if, in using this method, it is necessary to take one's own sponges to the different hospitals. Not at all. Where the operating-room nurse is not familiar with the method, she is given, a day or two before the operation, a slip containing definite directions for preparing the rolls and strips.

Nurses, as a rule, welcome the method, stating that it is far less troublesome than the sewing of the numerous small pads and sponges. The directions are as follows:

ROLLS AND STRIPS FOR ABDOMINAL SECTION.

1 roll of gauze—5 yds. long, 9 in. wide—4 thicknesses.

4 strips of gauze—10 yds. long, 3 in. wide—6 thicknesses.

Have another set (one roll and four strips) in reserve.

For the rolls, yard-width of gauze is used—when folded to form four thicknesses it is 9 in. wide. For the strips, the yard-width of gauze is divided into two strips and each of these, when folded to six thicknesses, is about 3 in. wide.

Turn in all raw edges so that no raveling can be left in the abdominal cavity.

For the Roll, fold back and forth instead of rolling in the ordinary way, so that it can be spread out quickly. Wrap the roll in a cloth for sterilizing.

Pack each Strip into a separate small cloth bag (5 in. wide and 10 in. deep) and attach a large safety pin to the bottom of the bag. Make the bag of firm extra-heavy muslin or drilling and sew with French seams to avoid ravelings on the inside. The end of the strip first introduced to bottom of the bag should be fastened there securely by stitching through and through. Then pack the strip firmly into the bag in such a way that it will come out easily, a little at a time as needed. When filled, fold over the top of the bag and pin with a large safety pin. Wrap together in a cloth, each set of four strips (each strip in its bag). Sterilize in the usual way.

At the time of the operation, a convenient arrangement, particularly for emergency work, is to place two sterile basins within reach of the operator. One basin is to be partly filled with hot normal saline solution and is for the roll of gauze, while the other basin is to hold the four bags containing the gauze strips which are used dry.

That is all the paraphernalia necessary, and the "pads and sponges" are all within instant reach of the operator. The advantage of having the sponges always within instant reach of the operator will be particularly appreciated by those who have been obliged to handle serious and troublesome intra-abdominal conditions without trained assistants.

The gauze strips may be used also for temporary packing to check hemorrhage or for any other purpose for which strip-gauze may be required in the course of an operation.

INSTRUMENTS.

In about 25 per cent. of the reported cases in which a foreign body was left in the abdomen, the foreign body was an artery forceps. In a series of 19 cases, seven of the patients died. In another case in this series, the forceps was missed before the wound was closed and was searched for and found in the cul-de-sac. In two cases the forceps was missed after the abdomen was closed and the wound was reopened and the forceps found. In two cases the forceps was removed from an abdominal abscess, in one case the forceps passed into the bladder and in three cases the forceps passed spontaneously per rectum in nine months, ten months and four years respectively after the operation.

To prevent leaving any foreign body in the abdominal cavity, it is necessary to take into consideration everything used in the wound or about it. When considering this subject two years ago, it became evident to me that dependence on the counting of instruments at the close of an operation was just as hazardous as the dependence on the counting of sponges. So I decided to eliminate this hazardous dependence on counting by the use of very long instruments exclusively, as previously recommended by some authorities.

Every instrument used about the wound is long—so long that a por-

tion of it is practically always outside the abdominal cavity. Again, if by accident such an instrument should slip entirely into the cavity, its length is such that it would almost certainly be felt when the hand is carried into the cavity for the final palpation before closing. All the artery-forceps, dissecting-forceps, tenaculum-forceps, pedicle needles, scissors and other instruments for internal work are between seven and eight inches long, the shortest being the needle holders (7 to 7½ inches). The shortest instruments used anywhere about the wound are the heavy abdominal-incision scissors and the scalpel (6 to 6½ inches), both of which are laid aside as soon as the peritoneal cavity is open.

The needles and Murphy buttons are not brought near the wound except when held in a forceps or with a suture attached. No Michel clamps (for holding rubber tissue or gauze along the wound margin) or other small unattached objects are allowed near the wound as long as the peritoneal cavity is open.

MEDICO-LEGAL COMPLICATIONS.

It is obvious that foreign bodies left in the peritoneal cavity during operation are very likely to lead to medico-legal complications. Several suits have been filed as a result of such accidents. But, so far as I have noticed, there has been no award of damages and, the theoretical questions as to what amount of legal responsibility attaches in such a case and to whom it attaches, have never been thoroughly threshed out. There are usually other conditions and questions that tend to obscure the issue. Each case had modifying features of its own.

It seems that the circumstances of each case must determine whether in that case the legal risk of such an accident should be assumed by the surgeon who does the operation or by the nurses who care for the sponges or by the institution in which the operation takes place or by the patient. The patient herself must assume some risk in every operation and she certainly can not cast on others all the risk due to unusual and unforeseen accidents, where reasonable skill and care are exercised.

Probably the most celebrated medico-legal case of this kind was that in which suit was brought against Prof. Kosinski. A synopsis of this famous case is given in Schachner's article. The principal facts were in brief as follows: On December 22, 1897, Kosinski operated for the removal of an ovarian cystoma in a patient 50 years of age. It was a complicated case and the operation was very difficult. After a few days there was an elevation of temperature and some pains and, in the examination, an inflammatory infiltration could be felt near the pelvic brim. In the meantime two artery forceps had been missed. It was thought that the missing forceps might be in the abdominal cavity and, after six weeks, the suspicion became so strong that the abdomen was reopened. The suspicious mass of exudate was investigated but no forceps were found. After this the patient became better and left the hospital.

The trouble persisted, however, and three months later Kosinski still

thought the forceps might be in the abdomen. He communicated his suspicions to the family and insisted on another operation and offered to perform it gratis. The family would not consent to another operation. The patient went to several physicians, one after another, hoping to get well without an operation.

Finally in June, 1898, the symptoms became acute and threatening and the physician who was called in, insisted that the patient be taken to Kosinski at once that he might perform the operation, which had then become imperative. This the family refused to do and called in another physician, who operated. On opening into the mass at the pelvic brim he found a cavity in which lay the two artery forceps. Both forceps had forced an entrance into the external iliac artery. The removal of the forceps was attended with a furious hemorrhage, from which the patient died on the table. This was six months after the primary operation.

Suit was entered against Kosinski and there was an extensive trial, which resulted in the acquittal of the accused as far as causing the death of the patient was concerned—it having been shown that he strongly insisted on a line of treatment which would probably have prevented the patient's death, had the treatment not been peremptorily rejected by the family.

A curious feature of this case was that a number of radiographs of the suspicious area were made, but not one of them showed the forceps—the failure being due doubtless to defective technique.

EXAMINATIONS OF THE FECES AS A ROUTINE PROCEDURE.

By JESSE S. MYER, M. D., of St. Louis, Mo.

Today the clinical laboratory does not present a more interesting chapter nor a more fertile field for work than the examination of the feces. As a routine procedure this work has taken its place in the same rank with the examinations of the urine, stomach contents and blood. In many diseases of the gastrointestinal tract, as well as certain diseases manifesting themselves only in constitutional symptoms, an absolute diagnosis is often impossible without the examination of the feces. It is true that this work has not become as popular, and is not as universally done as are the examinations of other excretions, and in private practice will probably never be so, because of the unpleasant duty on the part of the patient of collecting the specimens and the unpleasant features in the examination. The work cannot be done satisfactorily on the "little table in the corner" because of the unpleasant odor. For this reason, as well as because of the specialized knowledge required, the work will in all probability always be done by those especially prepared for it, both as to laboratory facilities and experience.

Personally, I can say that the satisfactory results derived from a study and practice of the examination of the feces rob the procedure of practically all of its unpleasant features. The intestines are unfortunately so situated and constructed that the physical examination yields but little that is positive, excepting, of course, in case of tumefactions, stenoses and localized inflammations. In the diffuse affections of the intestines, the physical examination reveals practically nothing aside from the usual areas of tenderness. The character of symptoms produced by the various diseases of the intestines are so similar in nature that we are justified in saying that there are no pathognomonic signs of certain pathological lesions. The previous history, while helpful in arriving at a diagnosis, does not make possible a positive diagnosis except in isolated cases.

Until the introduction of the stomach tube and the test meal, within the past two decades, the diagnosis of gastric disturbances was, for the same reasons, not reduced to a science as it is at the present time. Since the development of this art, the examination of the stomach contents has become a general practice among physicians who have the time and inclination to call to their aid laboratory findings in the diagnosis of gastric disturbances. No one can dispute the great value that is attached to these examinations. The diagnoses of intes-

tinal diseases are quite as amenable to laboratory interpretation, and yet only during the last decade has the subject received anything like its merited attention and then only from a few laboratory workers and specialists in gastrointestinal diseases. While it is a fact that experience and persistence are of the greatest importance in the development of thorough knowledge of the technique, nevertheless with reasonable powers of observation and even a meagre knowledge of microscopy and chemistry, much can be accomplished. Because of the great variety of substances ingested and consequently excreted in the feces, the work presents a most fertile field for misinterpretation. Therefore, repetition, persistence and careful observation are the chief requisites.

The objects of the examination of the feces may be said to be three-fold, namely: (1) The diagnosis of diseases manifesting themselves through symptoms on the part of the gastrointestinal tract in the largest sense of the term, including therein the stomach, intestines, liver and pancreas. Among these symptoms may be named diarrhea, dysentery, colics, constipation, mucus and blood in the stools, etc. (2) Certain obscure constitutional diseases (pernicious and secondary anemias, convulsions in children and certain nervous manifestations, etc.) in which there may or may not be accompanying symptoms on the part of the gastrointestinal tract. (3) The functional determinations of gastrointestinal digestion.

It shall not be within the scope of this paper to enter into the discussion of the details of technique of examinations of the feces, for this would involve, depending upon the point to which these analyses are carried, the most intricate problems of chemistry and bacteriology. In the ordinary routine work, these are not required any more than are the examinations for indican, acetone, the diazo reaction, etc., in the routine examinations of the urine.

In order to draw deductions from the microscopic examination, which is by no means the least important part of the examinations, the stool should be obtained in as fresh and undisturbed a state as possible. It should be inspected in a fresh state, because upon standing the surface of the stool becomes darker through the further oxidation of the coloring matter, and also because of the destruction of the motility of certain parasites, such as the ameba coli, etc. The stools should be passed if possible into the very vessel in which it is brought to the laboratory. (a Mason jar will suffice) in order that blood, mucus, etc., may be observed in its relation to the entire mass of feces. In the inspection of the feces, there must be taken into account the amount, consistency, color, odor and the presence of macroscopical particles. As to the amount of feces passed in twenty-four hours, but little need be said, for this varies with the quantity and quality of food ingested. One partaking freely of proteids, such as meat, eggs, etc., which leave but little residue, will necessarily pass a smaller, harder, darker stool than

one eating freely of carbohydrates, in the form of potato, spinach, asparagus, and the green vegetables in general. These substances leave a large residue of cellulose. For this reason the season of the year may greatly influence the size of the daily passages, the stools being larger in summer, when one eats freely of fruits, berries and green vegetables. Copious, infrequent stools point, as a rule, to the existence of a disturbance in the upper portion of the intestine, while meagre, frequent stools point to the existence of the trouble in the lower portion of the intestine. While one or two fairly copious stools daily may be considered the normal state, there are many cases on record in which individuals, in a perfect state of health, are uncomfortable without three or four actions daily; while on the other hand there are certain individuals who find that they feel best when having but one action a week. These, however, are exceptions to the general rule.

The normal consistency of the feces, while difficult to describe in words, is a point to which physicians have called attention for many decades as an indication of the state of the intestinal tract. The stool should be of such a consistency as to maintain its form after being passed without, however, retaining the imprints of the haustræ. A liquid stool is always abnormal if not produced by a cathartic. The normal stool then should be a soft, cylindrical mass or form in the vessel a cone-shaped or pyramidal mass. Hard scybalæ indicate a prolonged retention in the colon, for it is in the colon that the water is extracted from the intestinal contents. A diarrheic stool indicates an increased peristalsis on the part of the colon alone, or the small intestine and colon. The contents enter the colon in a fluid state and, therefore, if hastened through the colon are expelled in this state.

The color of the feces is usually dark brown, due to the end-results of bilirubin oxidation to hydrobilirubin. In total absence of the bilirubin from the intestinal tract, as in cases of complete obstruction of the common duct, the stool has an ashen gray or clay color. A number of variations in the color of the normal stool may be produced by the character of food eaten; if meat predominates the color will be a dark brown; if vegetables, a light brown; if milk, a light or orange yellow; and if fat, a grayish yellow color. Vegetables containing iron,—such as spinach,—give a darker color to the feces. The influence of the various drugs upon the color of the feces is well known. Heavy metal salts, such as bismuth subnitrate, iron preparations, etc., produce a black color as a result of their conversion to bismuth or iron oxydul. In these cases the microscopic examination shows the color to be due to rhomboid-shaped black crystals. Charcoal also gives a black color to the stool and is found in the feces microscopically as amorphous black masses. Therefore before venturing a diagnosis as to the presence of blood in the stools, the patient should be carefully questioned both with reference to drugs and food taken in the previous forty-eight hours. These factors have often led to the mistake of suspecting blood, which

gives a similar color to the stool. Depending upon the amount of blood present and the source of its origin, the feces may vary from a very dark brown to an inky black, due to the conversion of hemaglobin to hematin. If the stool appears black in color, due to blood, it indicates that the blood has been in the intestine for a considerable time, hence, comes from the upper part of the gastrointestinal tract, as, for instance, in ulcer of the stomach and duodenum. If, on the other hand, the blood comes from the lower portion of the tract, it is more apt to appear in the fresh state, giving to the stool a reddish brown color. While this is the rule, it is not infallible, for it must be remembered that blood coming from the small intestines may be carried through so rapidly as to appear in the fresh state, and on the other hand, blood coming from the colon may remain there so long as to be changed in the colon. However, if the stool is black through and through and is passed in a formed state, we may conclude that it was completely admixed with the feces while still in a liquid state, and inasmuch as the feces begins to harden in the colon, such an admixture must have taken place in or above the cecum. Fresh blood intimately admixed with the feces occurs only in liquid stools and usually comes from the colon. If the stool is formed, fresh blood is not found thoroughly admixed with it, for reasons that are evident. A few drops of fresh blood passed immediately after, hence on top of the stool, come invariably from the rectum (hemorrhoids, fissures, etc.), and the same may be said of a drop or few drops immediately preceding the stool. Blood adhering to the surface of scybalous masses come usually from a point below the splenic flexure of the colon, most often from the sigmoid, because it is here that the formed stool takes on the shape of the haustræ.

In my experience these same rules may be applied to mucus in the stools. Small bits of mucus intimately admixed with liquid feces usually come from the small intestine, while the larger masses not intimately admixed with the feces usually come from the colon. Much depends upon the length of time that was required for a given stool to be expelled, as to character of mucus found. It has been maintained by some authorities that mucus from the small intestine is practically never found in the feces, having been dissolved in its transit. Mucus on the external surface of scybalæ comes from the lower portion of the colon, almost invariably the sigmoid or upper portion of the rectum. Small quantities of jelly-like mucus passed just before or just after the stool, come from the sigmoid or rectum.

After the stool has been inspected with reference to the qualities just described, a portion should be set aside for microscopic and any chemical examinations that may be indicated. The remainder is washed through a specially designed sieve, and the large particles remaining on the sieve are examined with reference to (1) food remnants, (2) parasites, (3) concretions, (4) foreign bodies. There occur in the feces of practically every individual partaking of a mixed diet,

a certain amount of food residue, which varies in amount according to the quantity and character of food eaten. The greater the amount of vegetables, the greater the residue. This is due to the fact that practically all vegetables contain a greater or less amount of cellulose, which is practically indigestible in the human intestine. The vegetable residue that is to be found in any stool depends upon three factors: (1) The amount and character of the cellulose present (capsules of peas, and beans, the fibro-vascular bundles in celery and the stalks of vegetables generally, the seeds of berries and fruits, etc.). (2) The mode of preparation of the food (as to whether raw or cooked, strained or unstrained, etc.). (3) Degree of mastication.

There is no doubt but that much of the indigestion, gastric and intestinal, is due to the poor preparation and to the rapid bolting of food. It is amazing at times to note the large amount of undigested residue which may be found in the washings of the feces, not only of children, but of unthinking adults as well. Large quantities of raw fruits with seeds, the stalks of vegetables, peas, beans, corn, etc., are swallowed without being properly masticated, and often without being properly cooked, and as a result are found practically unchanged in the feces. I have often found a demonstration of this sort a splendid object lesson to patients and have thus often succeeded in getting them to correct their habits by showing to them the probable cause of much of their indigestion. I could cite a number of cases in which a change in the character of food and habits have completely corrected the existing gastrointestinal disturbances. Unless meat is swallowed in large portions, it is rarely found in the stool of a healthy individual, excepting as microscopical remnants of muscle fibres. Even a large bolus of meat is usually broken up before it is evacuated with the feces. However, in cases where diarrhea already exists, meat may be found in the feces in a practically undigested state. Schmidt has shown that the fibrous tissue is digested in the stomach, while the muscle fibres are largely digested in the intestine. Therefore, a poor digestion of fibrous tissue indicates a gastric disturbance, while the poor digestion of the muscle fibre indicates an intestinal indigestion; a poor digestion of both indicates a disturbance in the stomach and intestines.

Not infrequently intestinal parasites, or portions thereof, are found in the coarse washings. The parasites which we most frequently meet in this section are *tænia saginata* and *tænia solium*, or tapeworms obtained from eating raw beef and pork, respectively, *ascaris lumbricoides*, or ordinary round worm, the *oxyuris vermicularis*, or pin worm. In the last decade another parasite has been added to those sometimes met with even in this state, namely, *ankylostomum duodenale* or hook worm. This is essentially a tropical disease, which of late years has migrated to this country, and not infrequently cases are reported in various sections of the United States, especially in the Southern States. The worms, however, are not themselves usually discovered in

the feces, but are detected by the presence of the eggs, of which I shall have occasion to speak later. Often the first evidence that one has of the existence of parasites is in the discovery of segments of the tapeworm, of the male or female ascaris, or of large numbers of the oxyuris. These are practically the only parasites that we meet with in this section visible to the naked eye, and the diagnosis may be promptly made upon discovering portions or the whole parasite.

The concretions that may be met with in the washings of the feces are gall stones, fecal concretions and fatty acid concretions. Gall stones are often searched for after acute attacks of colic in which cholelithiasis is suspected. In such cases the feces should be examined for a period of at least seventy-two hours following the attacks. While the inability to find the concretion in the stool does not exclude the existence of gall stones, the positive finding absolutely confirms the diagnosis. When a gall stone passes through the common duct into the duodenum, it is usually found intact in the feces, though it has been shown, especially in experiments upon animals, that they are sometimes crushed and destroyed in their passage through the bowels. Fatty acid concretions, so often found in the feces in those ingesting large amounts of oil, especially olive oil, have led to the employment of this method by quacks to deceive the layman. Persons afflicted with paroxysmal attacks of pain in the abdomen are given large quantities of olive oil, some of which the intestine is incapable of assimilating and absorbing, and is, therefore, expelled in the form of fatty acid concretions. These concretions, are sometimes passed by the handful and are demonstrated to the patient as the sought-for gall stones. If one is in doubt as to the character of a concretion, i. e. whether it is a fatty acid, fecal concretion, or a gall stone, a section through it will usually enable one to say definitely to which class it belongs. If there is still doubt, the concretion may be dropped into ether, which, in the case of a fecal concretion, will have no effect at all; but in the case of fatty acid concretions or gall stones, will dissolve them. After the evaporation of the filtered ether, cholesterin will be left behind as a precipitate if the concretion is a gall stone, while only fat droplets will remain in the case of a fatty acid concretion. Fecal concretions may be at times so hard as to greatly resemble gall stones in appearance and structure. In this case the chemical test will very quickly clear up the diagnosis.

It would be impossible to include within the scope of this paper the details of the chemical, microscopic and bacteriological examination of the feces. The microscopic examination presents by far the most interesting phase of the subject, because of the great variety of vegetable cells and other morphotic elements. Through the aid of the microscope one recognizes the microscopic varieties of intestinal parasites, which escape, of course, the macroscopic examination. Among these may be included *ameba coli*, with which we now meet not infrequently in this state. Since the Spanish-American war, especially, a number of cases have been reported. Formerly the

disease was essentially a tropical disease and found only in seaport towns in this country, but in the last ten years especially cases have been reported from practically every section of the country and as far north as Michigan. It was my opportunity to report one of the first cases, if not the first case officially reported in this state, in 1900. The moving amebæ are to be found in the sanguinous mucus on a slightly warmed stage. An absolute diagnosis cannot be definitely made unless they are found in motion. Among other unicellular organisms found in the feces may be mentioned the *cercomomas intestinalis*, the *trichomomas intestinalis*, the *lamblia intestinalis*, etc. These have no recognized pathological significance and need only be mentioned in passing.

The eggs of the various parasites may be recognized in the microscopical examination of the feces and thus a definite diagnosis of the presence of the worm made. Only recently a case came into my hands in which I was able to make a diagnosis of double intestinal parasitism (*trichocephalus dispar* and *ascaris lumbricoides*) through the presence of the eggs. In hook worm disease, the worm itself is rarely found, and the diagnosis can only be definitely made on the demonstration of the eggs, which are quite characteristic. It is scarcely possible to make a differential diagnosis, from the appearance of the eggs alone, between the *tænia solium* and *tænia saginata*. But, with this exception, there is little resemblance between the eggs of the various intestinal parasites. Upon finding the eggs, therefore, the character of the parasites present may be readily determined. Great care is necessary not to confound the eggs with remnants of vegetable cells, which to the unpracticed eye may appear very similar. Plant hairs, plant spirals, various forms of vegetable cells, epithelial cells, blood corpuscles, leucocytes, various bacteria, fungi, etc., all play a role in the microscopical examination of the feces. Among the crystals found may be mentioned fatty acid, oxalate of calcium, ammonio-magnesium-phosphate, and the Charcot-Leyden crystals. It will be impossible here to dilate upon the significance of the microscopical findings of all of these morphotic elements, and one cannot hope in the allotted time to do more than call attention to them.

The test diet of Schmidt and Strassburger has received much attention during the past few years from those engaged in this sort of work. A diet of known consistency is administered to the patient for several days and the feces examined as heretofore stated, with reference to food remnants, the stage of digestion, the presence of fibrous tissue (indicating a deranged gastric digestion), undigested muscle fibres (indicating a deranged intestinal digestion), the presence of fats, fermentation, bilirubin oxidation, etc. Too much credit cannot be accorded them for the character of their work. Their test diet will occupy the same position with reference to the examination of the feces, that the test meal does in the examination of the stomach contents, and promises just as satisfactory results.

In reviewing the significance of blood in the feces, I purposely omitted until this time reference to the presence of traces of blood in the stool, which do not manifest themselves microscopically or macroscopically. When a very small quantity of blood is present in the stool and has been completely broken up, its presence can only be determined through chemical tests. The presence of minute quantities of blood has been called "occult hemorrhage" and may come from bleeding vessels or the surfaces of denuded areas anywhere along the gastrointestinal tract from the mouth to the rectum. In all cases, therefore, in which ulcer of the stomach, cancer of the stomach, ulcer of the duodenum, or other portions of the small or large intestine, and carcinoma of the intestine are suspected, no examination of the feces is complete without a chemical test for blood by the guaiac-turpentine or benzidine tests. In order to exclude the possibility of the patients having ingested anything containing blood pigments, such as meats, broths, etc., they should be put on a diet free from these substances for two or three days prior to the examination. The mouth should be carefully examined to exclude the possibility of minute quantities of blood having been swallowed, and the rectum to exclude the possibility of hemorrhoids, fissures, etc., (in which case the blood would be seen macroscopically). With these precautions, the finding of a positive trace of blood in the feces, together with the symptomatology and physical findings enable one to arrive definitely at a diagnosis of ulcer or carcinoma, which might otherwise remain in doubt.

The determination of traces of blood in the feces by the guaiac-turpentine and benzidine tests, recommended by Weber and the Adlers respectively, and perfected by Boas, Schlesinger and Holst, and others, has proven one of the most valuable aids, in the diagnosis and differential diagnosis of gastrointestinal diseases, that has come to us in the last decade.

In presenting this résumé of important points in the examination of the feces, it has not been my endeavor to cover the subject, but simply to touch upon those features that enter into the routine examination. The chief object, however, is to direct attention to a class of work that is being greatly neglected by the general profession.

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PROGRESSIVE HEMIPLEGIA OF THE LEFT SIDE DUE TO
GLIOSIS AND VASCULAR LESIONS OF
THE RIGHT CENTRUM.

By FRANK R. FRY, M. D. and MALVERN B. CLOPTON, M. D., of St. Louis.

Theo. H., aged 52 years, farmer, large strong man, previous health good.

He was first examined by us November 29th, 1907. In May (six months before this examination) he noticed for the first time a slight twitching in the left cheek, and later in the lower part of the face. This was accompanied by a slight paresthesia, formication and numbness. In the latter part of June or early part of July he noticed that the hand and fore arm were becoming slowly weakened. The spasm in the face continued and a similar one began to appear in the thumb and index finger, and later in other portions of the hand. There was also a good deal of paresthesia in the hand similar to that in the face. The times of appearance of these various symptoms were confirmed by his wife and son, who accompanied him. She stated that in September he began to look poorly and to show signs of general weakness. But he complained of no symptoms except those mentioned above. There had been no vomiting, and very little if any vertigo and no headache. When asked about the latter he admitted that within the last days he had felt for the first time some slight pains in the right parietal region. He was a person of very good intelligence. His mind was perfectly clear. There was no tinnitus or complaint about hearing.

A physical examination showed no tenderness of the scalp or skull and no difference of percussion sounds between the two sides. The pupils were equal and reacted to light and accommodation. There were no complaints of visual disturbance of any kind. The fundi oculi were practically normal.

In the left hand and wrist muscular power was much reduced. There was present a feeble flexion of the wrist and the fingers. Extension of the same was even more feeble, and slow of accomplishment. Rotation of the wrist and the elbow movements were somewhat stronger, but evidently feeble. The shoulder was still stronger but below normal.

There had been some jerking, in the left foot, but no spasm like that of the face and hand. There was probably some loss of power in the toes and ankle, but by comparison with the other side it was difficult to demonstrate it during the examination. He stated that in walking the foot did not feel as secure as the right one, that, the leg below the knee especially was weaker.

No knee-jerk could be obtained on either side, even by re-enforcement. There was a feeble plantar (flexion) reflex; better on the right. There was no Babinski, Oppenheim, or paradoxical (Gordon).

During the times he was in the office there were two slight spasmodic seizures of the face. They were confined to the cheek and the angle of the mouth. They were of short duration, succeeding waves of spasm of possibly 15 to 30 seconds. They were not attended by mental phenomena of any kind, but they were accompanied by a paresthesia that was slightly uncomfortable.

At the time of this examination we could not detect in the face, hand or foot or elsewhere any objective sensory defects. The examination was carefully conducted. Position and localizing sensibility, pressure, light-touch, pain and temperature were carefully tested everywhere. There was not the slightest degree of asteriognosis in the hand. Although it was so parietic as to make it very difficult and often impossible for him to retain a grasp on the articles given to him, yet he recognized them in a prompt and normal manner; *e. g.*, he could at once distinguish be-

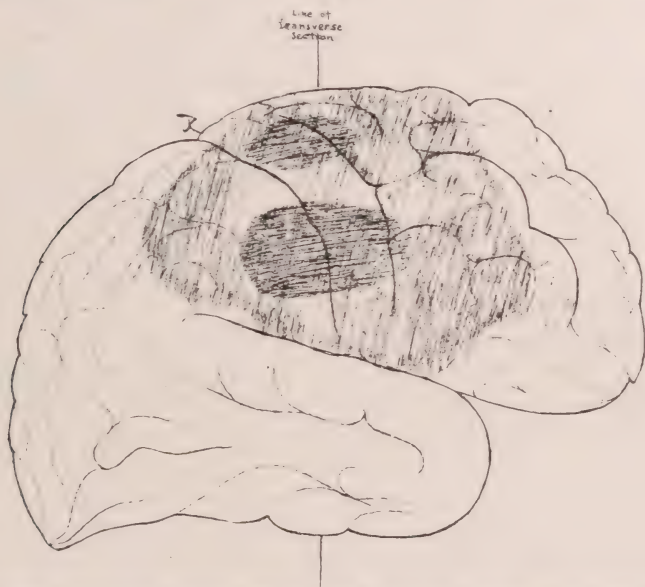


Fig. I. Glioma involving right frontal and parietal lobes. Hemorrhagic areas shaded dark.

tween a quarter piece and a half dollar, naming them correctly. He could quickly tell a camel-hair brush, a lead pencil, a small pocket knife. An iron ring, large enough to slip over the fingers without touching was placed on his finger. He recognized at once what it was, and named correctly the fingers on which it was placed, one after another. All of these tests, of course, were made with the patient's eyes properly blind-folded and the other precautions to make them reliable.

On account of the total absence of sensory signs we concluded that the progressive hemiplegia was probably due to a neoplasm confined to the ascending frontal convolution, or at least not extending posterior to it. We recommended to his physician, Doctor Mark Crawford, of Mexico, Missouri, a prompt exploration.

At this time the "cardinal" symptoms of tumor were absent. He had practically no headache, very little if any actual vertigo, no vomiting and no optic neuritis.

He had a decided thickened condition of the arteries which could be felt in the radials and in the brachials as well. The urine showed nothing important.

We did not see the patient again until January 16th, 1908, seven weeks after the foregoing notes were made.

We learned from his wife and son that within a few days after our previous examination he had had a severe epileptic seizure, which lasted an hour (?). It began with certain rolling movements of the left hand, quickly followed by a general convulsion. Within a week after he had five similar attacks. After an interval of another week he had two more attacks. Two weeks ago, after a very hard attack, the leg became paralyzed and has remained totally helpless since. He had been having headache since his last visit, but it had only become severe within the last two weeks, and was located in the left parietal region. The weakness in the left arm had steadily progressed until the whole member had become totally paralyzed.

We found on examining him that he could not move any portions of the left upper or lower extremities. The lower part of the face was paretic, but relatively not as much so as the extremities. There was a slight knee-jerk and ankle-clonus; a very slight (flexion) plantar reflex; no Babinski, no Oppenheim.

Owing to the patient's stupid condition a satisfactory sensory examination could not be made at this time. It was necessarily limited to contrasting the reaction of the opposite sides of the body to various kinds of stimulation. This was done at times when he was clear enough to respond to some extent, but incapable of sustained attention in a degree necessary for reliable sensory tests. It was evident, however, that there was a good deal of sensibility to pain on the whole left side. He could also at times designate the region pricked or firmly pressed *e. g.* the face and hand.

Three days before he entered the hospital he had had a very severe convulsion (status?), and after it, had been given chloral quite freely. When he reached us it was a question how much of the stupor was due to drugs. The temperature was normal, the pulse 56, the blood pressure 126 (Janeway apparatus), the urine 1023 with 1-10 per cent. of albumin and some hyaline and granular casts.

Next morning (17th) he was much clearer and answered questions coherently. He complained greatly of headache or distress in the right parietal region. From this time until the operation on the following morning he fluctuated between states of profound stupor and partial lucidity. The pulse ranged from 52 to 76, the blood pressure from 106 to 126, the temperature normal. We felt that there was very slight chance of benefit from an operation. But his relatives decided to accept it.

Operation, January 18, 1908. Cushing tourniquet over gauze. A large osteoplastic flap over the right motor area was made by trephining at the angles, cutting on a bevel with a Gigli saw to connect these openings, and making the vertical cuts with a De Vilbiss. The base of flap was easily broken and the dura exposed over a space 3 inches in diameter. There was not much bulging. The brain did not pulsate until the dura was opened through a horse-shoe incision $\frac{1}{2}$ inch inside the bony margins. Palpation showed no induration or evidence of a tumor over any of the area exposed. The dura was immediately closed with cat gut. The closure was attended with some difficulty on account of the bulging of the brain. There was marked oozing at the time from the scalp and a temporary dressing was applied. In a few minutes all bleeding had apparently stopped. The permanent dressing was applied without draining the wound. The patient's condition was good throughout the operation. The brain had been exposed in 20 minutes after anesthesia was begun.

After returning to bed pulse was 80 and general condition good; not much disturbance from the operation except at no time did the patient become clear in his mind, arousing only enough to bring his hand to the right side of the head when asked if there was any pain. There was considerable bleeding from the wound which made it necessary to change the dressing the next morning. The temperature began to rise shortly after the operation and increased steadily up to midnight when it was 104.5. The pulse remained at about 80, but the respiration became more rapid rising to 40 a minute and showing a Cheyne-Stokes character.

January 19th. The stupor deepened, temperature dropped some, pulse rose gradually from 82 at midnight to 140. The respiration was more regular and less frequent during the day. By night it was again Cheyne-Stokes, and had reached 46 a minute. The amount of kidney secretion was fair, the urine and feces passing involuntarily. The patient grew rapidly weaker. Temperature stayed about 104, respiration 48 and of same character, pulse weakened and death followed 24 hours after operation with the temperature 105.5 an hour previous. At no time after operation was there any evidence of a change in the left-sided paralysis.

Pathologic Findings. The brain was removed and hardened in formaldehyde. Beneath the skull, outside the dura there was a clot about $\frac{1}{4}$ inch thick, which had probably formed at the time of the marked hemorrhage a few hours after the operation. Aside from this nothing especial was remarked in the gross appearance except a very general atheroma of the vessels. The brain was not sectioned until it had been some days in the fluid.

The sections were made transversely, the slabs measuring $\frac{1}{2}$ inch in thickness. The right hemisphere was markedly enlarged throughout by a glioma which could be differentiated from the normal brain only by its whitish color. It occupied the major portion of the frontal lobe and much of the parietal. Beginning an inch from the frontal pole it

broadened as it went back. In places it approached the cortex to within a few m.m. The extent is shown in Figure I. In the center of tumor there were two necrotic areas, filled with bloody detritus. The smaller area nearer the median line was of a brighter red color and probably more recent. The necrotic area lay beneath the posterior and anterior central gyri and was very close to the surface. Figure II is a transverse section at the middle of the third ventricle and shows the general increase in size and the extent of the encroachment. The heavy shaded areas represent the necrotic hemorrhagic areas. Microscopically the tumor is a glioma.

Doctor N. M. Semple made the ocular examinations, with the following results: First examination November 29th, 1907. After correcting a myopia of 1 d., vision normal in both eyes, 20-15. Ophthalmoscope showed a deep physiological cupping of both discs. Central portion of



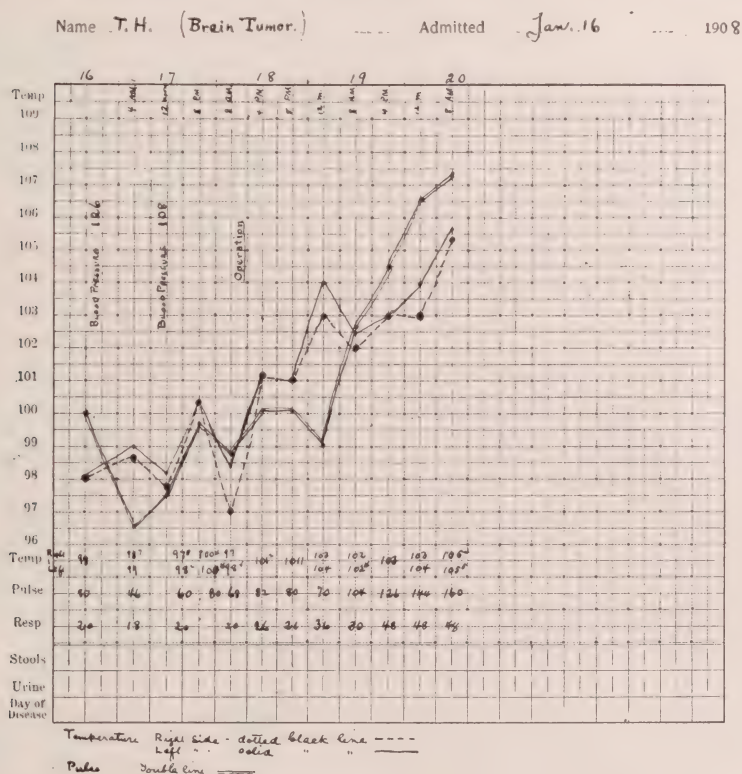
Fig. II. Transverse section at the center of third ventricle, showing increase in size of parietal lobe, and the extent of the glioma. Darker areas are degenerated with hemorrhages.

discs rather white. No hyperæmia, no oedema. Retinal arteries showed arterio-sclerosis, more marked in the lower temporal branch of right central artery. Examination of fields of vision showed decided concentric contraction of fields for red and green; red field of left eye more contracted than that of right; the contraction of fields for green same in both eyes. Fields for form, white and blue very slightly affected (practically normal).

Second Examination, January 18, 1908. Slight hyperæmia of both discs. Edges somewhat "washed," arteries small and thread-like, veins slightly tortuous. No appreciable swelling of discs. Left cornea less sensitive than that of right—apparently anesthetic.

Remarks: The first clinical evidence of this tumor of which we have any account, appeared at least six months before our first examination in November. During all of this time there were none of the general or cardinal symptoms of brain tumor, although it must in this time

have gained a considerable size. Eight weeks before the autopsy there were no objective sensory signs in the whole left side of the body. The position of the tumor, as revealed by the autopsy, makes it evident that there must have been extensive sensory disturbance of an objective kind before the patient's death. These facts throw some light on the rapid rate at which this tumor had grown, which must have been very rapid, even making allowance for the well-known fact that gliosis, less than any other brain neoplasm, compromises the functions of cells and fibres. At a recent meeting of the American Neurological Association,



Dr. E. E. Southard, of Boston, cited an instance of very extensive growth of cerebral gliosis in the space of six weeks.

This case well illustrates the fact that marked subjective sensory phenomena, *i. e.*, paresthesia of various descriptions, often appear in the absence of objective sensory signs. The subjective often antedate for a long (?) time the appearance of the objective signs in the same areas or territories. We have observed this fact, *i. e.*, the later appearance of the objective signs, in lesions of the brain, of the cord and of the peripheral nerves, and have referred to it in previous papers.

DERMATITIS FOLLOWING THE USE OF WALNUT JUICE
HAIR DYE.

By W. A. HARDAWAY, M. D., of Saint Louis.

For the past five or six years I have been meeting with cases of dermatitis of the face, neck and ears, due to the application of a hair dye made of walnut juice. Some of the attacks have been trivial, others have been severe and painful. In all the cases that I have encountered, the patients seemed to be unaware of the cause of the trouble, and kept on adding fuel to the flame by repeated applications of the offending agent.

In some instances the dye has been home-made, presumably a decoction of the walnut hulls; or, on the other hand, the article employed has been a preparation bought from the apothecary. The symptoms produced have been the same from both sources, so it is possible that the commercial dye really contains walnut juice.

As I have just said above, the amount of inflammatory reaction varies in different persons. Sometimes the attack is acute, involves the face, neck and ears, and presents such an amount of accompanying edema that the eyes are closed and the features made unrecognizable. The subjective symptoms consist mainly of burning and prickling sensations and a feeling of intolerable tension.

In some persons the condition is merely one of subacute inflammation, renewed from time to time by the reapplication of the dye, and limited to the ears and the skin at the margin of the scalp. Again, in persons of an "eczematous habit," to use an old expression, the dye has apparently evoked a veritable eczema, which has extended to the arms and trunk. The hairy scalp itself is not particularly involved, since, as is well-known, this region is naturally very insensitive.

It remains to be said that this untoward effect of the application of walnut juice is by no means universal, for this stain is in very common use as a hair dye, and only a relatively small number of people exhibit any idiosyncrasy in regard to it; still I believe that such accidents occur frequently enough to justify this brief note of warning.

BICHAT:
HIS LIFE, RESEARCHES AND CHARACTER.

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(CONTINUED FROM JULY.)

The first volume contains a detailed description of the bones of the skeleton, their articulations and movements, interspersed with chapters on development and the changes in old age. The second volume is devoted to a description of the muscles of the various regions, together with a discussion of the movements of each and the development of many. The anatomy of the larynx is considered in detail and the chapter closes with remarks on its development. The anatomy of the eye and ear are next considered, together with the development and old age changes. The first part of the third volume embodies a description of the anatomy of the central and peripheral portions of the nervous system. In the second part of this volume, Buisson discusses the alimentary tract. In the fourth, he describes the anatomy of the respiratory, vascular and lymphatic systems. The fifth volume by Roux is devoted to a description of the glands which are accessory to the alimentary tract, together with the peritoneum and the genito-urinary organs.

In this work, as in the general anatomy, he follows the principles laid down in his physiological researches. The organs are grouped in three great divisions. 1. Apparatus of animal life, under which he considered the organs of locomotion, the voice, external sensations coming through the eye, ear, nose, tongue, skin, and the internal, coming through the brain and spinal marrow. 2. Apparatus of organic life, under which he considered digestion, respiration, circulation, absorption and secretion. 3. Apparatus of generation, under which he discusses the anatomy of the generative organs and the foetal membranes.

In presenting a brief resumé of Bichat's Pathological Anatomy, the writer has first taken a few extracts from his general anatomy, in which he says: "It is not only the history of diseases that the anatomy of systems will elucidate, it will change in part the method of treating morbid anatomy. Morgagni, to whom we owe so much in this respect, and many others to whom the art is indebted, have adopted the general arrangement used in this description. They have examined the diseases of the head, chest, abdomen and extremities. In following this method they can only give us a general idea of the alterations common to all the textures."

"It appears to me infinitely more simple to consider at first all the

affections common to each system, and then to observe what every organ has peculiar to itself in the part that it occupies."

"It seems to me that we live at a period when morbid anatomy should take a higher stand. This science is not only that of derangements, that take place slowly as the principles or consequences of chronic diseases, but also it consists in the examination of all the alterations our organs can undergo at any period in which we may observe their diseases. With the exception of certain kinds of fevers and nervous affections, everything is within the province of this science. How weak appears the reasoning of many noted physicians, when we examine it, not in their works, but on the dead body. Medicine was for a long time excluded from the circle of the exact sciences; it will have a right to be associated with them, at least in the diagnostics of diseases, when we shall everywhere unite to accurate observation an examination of the changes the organs undergo. This course is beginning to be that of all rational minds; it will without doubt soon be general. What is observation worth if we are ignorant of the seat of the disease? You may take notes for twenty years at the bedside of the sick, upon the diseases of the heart, the lungs, the gastric viscera, etc., and all will be to you only a confusion of symptoms, which, not being united in one point, will necessarily present only a train of incoherent phenomena. Open a few bodies, this obscurity will soon disappear, which observation alone would never have been able to have dissipated."

Bichat's last course of lectures were on Pathological Anatomy, and although premature death has deprived us of any work from his hand which embodies his latest views, one of his zealous hearers gathered the outlines of his last course, and these came into the hands of Beclard and were found to be so complete that he transcribed them. At Beclard's death, they were published under the supervision of Boisseau. It is doubted by some if this work is to be relied upon. It was not published until three years after Bichat's death, yet the phraseology is so strikingly similar to that in Bichat's undoubted writings, that it seems more than probable that it is genuine. These lectures were grouped under twenty-three headings. In a preliminary discourse he briefly refers to the history of medicine, and points out that Morgagni truly created pathological science, and whilst yet in its infancy, he carried it to perfection, his work on chronic disease being a masterpiece. He says further, that "Anyone who has had the opportunity to see only a few post-mortem examinations, has observed that the condition of the organs, either internal or external, varies according to the affection which has produced death; we may distinguish three kinds of death: sudden death, that which happens in an acute malady and finally, that which follows a chronic disease." He next points out that the manner to proceed in autopsic examinations must differ according to the different kinds of disease we have to deal with; commonly it is prosecuted in an anatomical order, but it is not the best method to gain precise ideas on the subject; in gen-

eral, it is a great deal better to follow the order of the functions; in this manner we arrive at a knowledge of these which are injured." The remaining twenty-one lectures were as follows. 3. The alteration of fluids; first the circulation, then the exhaled and secreted. 4. On inflammation. 5. Diseases of the serous system, pleura, pericardium and peritoneum, the arachnoids, alimentary and genito-urinary systems. 7. Diseases of the cellular system, meaning all that tissue which fills up the interstices among the organ. 8. Pulmonary diseases. 9. Diseases of the glands. 10. Diseases of the cutaneous system. 11. Diseases of the muscles of organic life, heart, digestive muscular tissue, uterine tissue. 12. Diseases of the muscles of animal life. 13. Diseases of the arterial system. 14. Diseases of the veinous system. 15. Diseases of the nervous system. 16. Diseases of the absorbent system. 17. Diseases of the fibrous system, including the dura matter, periosteum, aponeuroses, ligaments, tendons. 18. Diseases of the synovial system. 19. Diseases of the cartilaginous system; under which he remarks that we understand very imperfectly the diseases of the cartilages. 20. Diseases of the medullary system, spina ventosa, only remedy amputation, may occur at the extremity or in the middle of long bones. 21. Diseases of the osseous system, exostoses, fragilitas assium, and mollities ossium. 22. Diseases of the pilous system. The hairs enjoy so obscure a vitality that the greatest number of their alterations are not understood. There is only plica Polonica, which is susceptible of a particular description. It is not known in France, but is epidemic in Poland. According to the description given of the disease, it is hereditary and spontaneous, but not contagious, and is ushered in by several general symptoms. The hairs are matted and glued into inextricable tangles, they grow long and coarse and discharge an ichorous fluid from their extremities and bleed when they are cut." 23. Diseases of the epidermoid system. In all the above the pathology alone was considered, nothing of the therapeutics.

A sketch of Bichat's life would be incomplete which did not attempt to present his views on therapeutics. His later views the world can never know, but some information may be gathered from his words in the general anatomy. He says: "Examine all the physiological and all the pathological phenomena and you will see that there is no one which cannot be ultimately referred to some one of the properties of which I have have spoken. * * * * Every curative method should have for its object the restoration of the altered vital properties to their natural type. Every remedy, which in local inflammation does not diminish the augmented organic sensibility, which in oedema and dropsy does not increase this weakened property; and which does not reduce animal contractility in convulsion and elevate it in paralysis, fails in its object.

"To what errors have we not been led in the employment and denomination of medicines; we have created deobstruents when the theory of obstruction was in fashion, and incisives when that of the thickening of the humors prevailed. * * * * The same identical remedies have

been employed under different names, according to the manner in which they were supposed to act. Deobstruent is one case, relaxent in another, refrigerant in another, the same medicine has been employed with all these different and opposite views; so true is it that the mind of man gropes in the dark when it is guided only by vague opinion.

There has not been, in the *materia medica*, a general system, this science has been governed by the different theories which have successively predominated in medicine; each has, if I may so express it, flowed back upon the other. Hence the vagueness and uncertainty that it presents at this day. An incoherent assemblage of incoherent opinions. It is perhaps of all the physiological sciences, that which best shows the caprice of the human mind. What do I say? It is not a science for a methodical mind; it is shapeless assemblage of inaccurate ideas of observation, often puerile; of illusory methods and of formulæ as fantastically conceived as they are tediously compounded. It has been said that the practice of medicine is disgusting. I add further that it is not, in some respects, the study of a reasonable man.

In the great hospitals at Lyons and Paris, he had an opportunity to follow the symptoms and manifestations of the many diseases. Here he could study the maladies of all countries and of all peoples. He studied experimentally the action of the various drugs in the wards of the hospitals. It is said that forty young men were selected to assist him in his work. He first studied the action of the drugs singly, and then in combination of two, three and so on, in order to ascertain what new therapeutic properties might thus be developed.

Early in July, 1802, he had been studying some macerated tissues which were in such an advanced stage of putrefaction that all his pupils had been driven away by the stench. On leaving the laboratory he had an attack of vertigo and fell on the stairs of the Hôtel Dieu, striking his head with such violence that he was unconscious for some time. Upon partially recovering from the injuries, he was attacked by what was then called putrid malignant fever, probably some form of septicaemia, and after fourteen days of illness he passed away on July 22nd, 1802, in the arms of his master's widow, whom he had continued to support and who repaid him by her loving care. All the professors of the faculty and upwards of six hundred students accompanied his body to the grave in Sainte Catherine.

Napoléon's famous physician, Corvisart, in writing the Emperor asking that a monument be erected in his memory said: "Bichat has just died upon a field of battle which numbers more than one victim. No one has ever done so many things in so short a time, nor so well."

Ten days after his death the following instructions were received by the Minister of the Interior:

"I pray you: Citizen Minister, to have placed in the Hôtel Dieu, a marble dedicated to the memory of citizens Desault and Bichat, which

shall attest the recognition of their contemporaries for the services which they have rendered, the one to French surgery, of which he is the restorer, the other to medicine, which he has enriched with numerous useful discoveries. Bichat would have greatly extended the domain of this science, so important and so dear to humanity, if pitiless death had not struck him down at thirty years."

I salute you,

"BONAPARTE."

On the 3rd of September, 1802, the Society of Emulation ordered a bust of its founder. In 1807, the same society ordered a medallion struck carrying the bust. In 1833, it placed a marble plate on the façade of the house where Bichat was born. In 1837, David (d'Angers), in making the frieze of the Pantheon, represents Bichat as dying with his head crowned with laurels. In one hand he holds his pen and in the other the manuscript of his book on Life and Death.

In 1830, the village of Lons-le-Saulnier erected a marble fountain, and upon this was placed a bust of Bichat by Huguenin. In 1843, the village of Bourge erected a marble statue of Bichat. This was also from the chisel of David. The great artist represents his hero in the attitude of work and meditation. His right hand rests upon the heart of a little girl who stands by his side. At his feet is an antique lamp, several dissecting instruments and a scroll, upon which one reads, "Researches on Life and Death."

In 1845, under the auspices of the Medical Congress, his remains were removed from the desecrated cemetery of Sainte Catherine to Père le Chaise. When the body was exhumed the skeleton was found in an admirable state of preservation, but the head was wanting. No little astonishment was created when Roux, his friend and physician at death, drew from his coat the skull of Bichat, which he declared he had possessed for upwards of forty years. When asked how he obtained the head he replied that it was useless to recall the circumstances. After placing a crown of laurels upon his head, his remains were again laid to rest.

In 1857, the statue which stands in the quadrangle of the school of medicine was unveiled with grand and solemn ceremonies.

In July, 1902, the French Society of the History of Medicine held memorial services on the centennial of his death. His tomb was visited at Père le Chaise where Blanchard gave an address pointing out especially the influence of Bichat on contemporary science. The house, at 14 rue Chanoiness, in which Desault and Bichat died, was then visited and Blanchard again made a few remarks on the intimate relation existing between Desault and Bichat; a commemorative plaque was then placed on the house. Later the members of the society and their invited guests assembled in the great amphitheatre when the beautiful tableau by Hersant representing the death of Bichat was taken from the cabinet and exposed for the admiration of friends. Addresses were then made by a number of eminent men and a medal was struck in memory of the occasion.

Having followed his brief career in running narrative and enumerated the honors which the world has conferred upon him, let us consider what his influence has been on the various branches of medical science.

Husson says that the anatomy was at this time bristling with details which repelled the young who were destined to study the art of healing. The prevailing conception was that each bone and organ conformed to a geometrical figure, and a fastidious nomenclature had grown up around this concept. His great service to gross anatomy was not in finding out new facts but rather in simplifying the nomenclature.

Bichat created general anatomy or histology. This work was the first in which the tissues were considered by themselves. Bichat states in his preface that the plan consists in considering separately and in detail each of the systems which through their diverse combinations form organs. Through the application of physics and chemistry to the study of the organs he was able to unveil many of the mysteries concerning their textures.

Gley says: "Bichat's description of the cellular serous and lymphatic systems and their relations is so precise that the later histologists only appreciated their worth little by little, although they were aided in their researches by powerful microscopes.

Serres writes that the secret of his great work was the principal of analogies. "It is this which dominates his histology, analogy of structures and analogy of properties give rise to analogies of functions and maladies. It is, I repeat the source of the imperishable work of Bichat and the reason of its useful application to the medical sciences."

Von Koelliker, the greatest histologist of the 19th century, says of Bichat's work. "Bichat's *Anatomie Générale* was the first attempt to treat histology scientifically and on this account merely, it constitutes an epoch; but besides this its importance was still greater inasmuch as the tissues were not merely clearly defined and fully and logically treated of, but full account was taken of their physiology and morbid alterations."

The founder of histology he was also one of the founders of modern physiology for he not only made a considerable number of important discoveries but also strongly advocated animal experimentation. This work had been carried on by Spallanzani, Haller and others; yet physiology was in many places still a subdivision of metaphysics. The great Larrey said: "He was already the greatest physiologist of his century and he must have been the greatest physician had he but lived twenty years more."

Concerning his influence on Pathology Cérése says the "Pathological Anatomy which was but a collection of isolated facts Bichat raised to the rank of a science."

He clearly saw that human anatomy should be elucidated by comparative anatomy, and human physiology by comparative physiology. Anatomy and physiology should be correlated instead of physiology being a subdivision of metaphysics. Pathology should be based upon

anatomy and physiology in diagnosis, and the findings confirmed by the autopsy. Therapeutics instead of being abandoned to medical tact should be studied in the wards of the hospital. He conceived the grand idea of erecting a complete system of medicine based directly upon observed facts and at the time of his death he was busy on the gigantic task of classifying all diseases.

His style of writing was exceedingly loose, owing to the fact that he never revised his manuscript. His writing was very fine and without punctuation. He wrote on all sorts of paper, of different sizes and colors, margins of newspapers, old envelopes, etc.

Blanchard tells us that while Bichat was writing his general anatomy the editor employed a boy named Chaudé as a messenger to obtain the copy leaf by leaf as Bichat wrote. He wrote only at night and never copied that which was to be printed the following day. He was obliged to work without relaxation in order to furnish copy for the printer. His room was small, filled with books, bones and dissections. This human debris together with the remains of his meals which were brought to him vitiated the air with a sickening combination of odors. To this chamber of horrors Chaudé came early each morning for his manuscript and at times could scarcely awaken Bichat. Chaudé says that Bichat while dressing would often recite and act with great precision and in a most dramatic way the parts of the principal actors whom he had seen at the Palais Royale or Français.

His method in scientific work was to redemonstrate the known facts; to repeat the observations and experiments which had led to doubtful results. In the practice of medicine he applied the same principle of looking directly at nature with his own eyes. He was always on the alert for new facts and when these were established they were co-ordinated with other known facts. In the introduction to his descriptive anatomy he says: "Dissect in anatomy; experiment in physiology; follow the disease and make the autopsy in medicine. This is the threefold path; outside of which there can be no anatomist, no physiologist nor physician. Look at all the great men whose names are inscribed in the annals of these sciences they have constantly followed this path. If I have attained any success it is because I have studied nature more on the cadaver than in anatomical works, more in the living animals than in physiological writings, and because I have studied more at the bedside than in medical books."

The celebrated Sandifort of Leyden wrote to a friend saying that "in six years your Bichat would have passed our Boerhaave." Tillaux says that "up to the time of Pasteur no one had had such grand and fertile ideas in medicine." Cérése states that "medical genius has never at a single bound raised itself to so great a height."

Not only did Bichat create a new epoch in medical science but also as Blanchard has stated, he had a considerable influence upon modern philosophy. Schopenhauer would permit his students to discuss

philosophy and psychology only after they had read Cabanis and Bichat while Auguste Comte, the creator of positive philosophy attributes to Bichat a preponderant influence upon the progress of science in general.

From Buisson's life of Bichat we learn much of his personality. He was a man of prepossessing appearance and amiable disposition, never given to anger or impatience. Although a man of mirth he never descended to be a merry-andrew. His generosity towards students both in giving time and money was a resource to the backward and needy. Quick to recognize talent he adopted every means of developing it, yet he never employed those ornate laudations which so often accompany the insincere compliment. He was always as accessible when engaged in the most laborious work as in moments of leisure. It was no trouble for him to come down from the position of schoolmaster to that of schoolmate.

He never hinted that he had walked among the learned, his every act was a proof that needed no further elucidation. A man of great frankness and candor yet always ready to sacrifice his opinion when a well founded objection was offered. In clearing the field of science of dogmas and delusions he did not engage in wordy warfare nor resort to bombastic rhetoric well realizing that many a noisy reputation fails to awaken an echo in posterity, instead he diligently worked away cutting off this root then that until no source of nourishment remained.

All the great minds loved him, yet there were little minds who sought to rob him of his hard earned laurels, not being able to pardon his ability. He was content to suffer their attacks; he never gave a direct rebuff, but always sought to restore the good fellowship which his malevolents themselves had broken. He had a soul ever warm, showing tenderness towards the hard, patience with the impatient, generosity to the selfish, and philanthropy toward the misanthropic. He dwelt in a perpetual Utopia of his own in which he never ceased to read the infinite book of nature of which the wisest know little more than the introduction. His philosophy springs neither from the classic hall nor scientific laboratory but from a magnificent human soul.

Like his noble father, his saintly uncle and his great master Desault, he gave to mankind his wealth, knowledge and life.

When we realize what he did in that brief life of thirty years we are not surprised that those who watched his career stood by with bated breath. Nor do we wonder that he who to-day reads the marvelous story feels the heart beat faster and the soul thrill with emotion as he exclaims in admiration, "Oh, wonderful Bichat."

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2. Description d'un nouveau trépan. Memoires de la Société médicale d'émulation. Vol. II, p. 277.
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4. Description d'un procédé nouveau pour la ligature des polypes. Ditto Vol. II, p. 339.
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MEDICAL AND SURGICAL PROGRESS.

THE DETERMINATION OF TRACES OF BLOOD (OCCULT HEMORRHAGE) IN THE FECES AND STOMACH CONTENTS.

A REVIEW OF RECENT LITERATURE.

By JESSE S. MYER, M. D.

1. THE DETERMINATION OF BLOOD IN THE GASTRIC AND INTESTINAL CONTENTS.—Weber (*Berlin. klin. Wochens.*, No. 19, 1893).
2. CONTRIBUTIONS TO THE STUDY OF OCCULT GASTRIC HEMORRHAGE.—Boas und Kochman (*Archiv. f. Verdauungskrankheiten*. Heft 1 and 2, 1902).
3. OCCULT GASTRIC AND INTESTINAL HEMORRHAGE.—Boas (*Sammlung klinischer Vortraege*. No. 387).
4. BLOOD IN THE STOOL AND STOMACH CONTENTS FROM HIDDEN SOURCES, ETC.—Clemm (*Archiv. f. Verdauungskrankheiten*, p 373, 1904).
5. THE RELATION OF CERTAIN ORGANIC COMPOUNDS TOWARD BLOOD, ETC.—O. and R. Adler (*Zeitschrift f. Physiologische Chemie*, Bd. 41, 1904).
6. THE EXAMINATION OF THE FECES FOR BLOOD.—Schumm (Jena, 1906).
7. COMPARATIVE INVESTIGATIONS CONCERNING THE DEMONSTRATION OF TRACES OF BLOOD IN THE FECES, ETC.—Schlesinger und Holst (*Deutsch. Medicin. Wochens.* No. 36, 1906).
8. THE DETERMINATION OF BLOOD IN THE FECES.—Schumm (*Muench. med. Wochens.*, No. 6, 1907).
9. THE VALUE OF THE BENZIDIN TEST IN THE DETERMINATION OF SLIGHT HEMORRHAGES, ETC.—Schlesinger und Holst (*Muench. med. Wochens.*, No. 10, 1907).
10. THE DEMONSTRATION OF MINUTE QUANTITIES OF BLOOD IN THE FECES AND GASTRIC CONTENTS, ETC.—Isler (*Centralbl. f. Grenzgebiete d. Med. u. Chirurgie*, No. 8, 1908).

In 1893, H. Weber presented his observations and results in examinations of the feces and stomach contents for traces of blood. This essay was the basis for future work along this line and, with but few minor improvements in technique, the test described by him at that time remains today one of the very best at our disposal. He recognized, as had those working before him, the difficulties of demonstrating small quantities of blood in the feces and stomach contents and yet appreciated the great importance of a test that would enable one to demonstrate its presence in cases of "suspected ulcer of the stomach and duodenum and carcinoma of the intestinal tract." He realized, too, in view of the fact that blood was given off only from time to time from the surfaces of these lesions, the necessity of making repeated examinations of the excreta. At that time the clinical diagnosis of blood depended upon (1) the microscopic demonstration of red blood corpuscles; (2) the test of van Deen which depended upon the principle that the brown solution of guaiac is colored intense blue by blood upon the addition of

turpentine; (3) Teichman's test, the micro-chemic demonstration of haemin crystals; (4) Heller's test, upon the addition of potassium hydrate to urine and boiling there is a red color of the precipitated phosphates due to blood pigment; (5) the spectral analysis.

All of these tests had been proven inadequate in the detection of traces of blood in the feces and stomach contents. The microscopic examination was unreliable because in both the stomach and intestines the corpuscles are quickly destroyed. It is noteworthy here that Nothnagel called attention to the fact that even in cases of considerable hemorrhage in typhoid fever he had not been able to demonstrate the corpuscles in the feces.

Van Deen's test, upon which Weber based his investigation, was unreliable because the same reaction was given by many vegetable rests, and many inorganic substances. This rendered it impracticable in the examination of the feces in which there occur both vegetable rests and inorganic substances. The Teichman test requires that the blood be in a rather concentrated form and is very satisfactory where particles, or drops, may be selected, but when a small quantity of pigment is diffused through a large mass of feces, the test is not sufficiently delicate. For this reason, Vierort recommended washing the blood out of the stool, evaporating the water, and testing the residue. The Heller test is not even exact in the examination of urine, much less feces, where other pigments are present.

The spectroscopic examination while reliable, presupposes the possession of a good spectroscope and experience in the use thereof. One inexperienced might easily, for instance, confound the chlorophyll line in the red with that produced by blood pigment. It is necessary to obtain the blood pigment in a clear solution, in a fairly concentrated form, and free from all other coloring matter which might give a similar spectroscopic scale.

Seiffert and Mueller recommended in this connection that the feces to be examined be first mixed with water to which a few drops of concentrated acetic acid had been added and then extracted with 1-5 of the volume of ether. The ether rises to the top stained with the coloring matter. If it remains foamy or opaque, a few drops of alcohol may be added to clarify it. The process of digestion converts hemoglobin into hematin, which is taken up by the acetic acid-ether, the ether may then be examined in the spectroscope and gives a definite absorption band in the red which needs to be differentiated from chlorophyll only. Weber, prompted by the desire to simplify a test which might be of general clinical value, ingeniously combined the step recommended by Seiffert and Mueller with the old van Deen test with guaiac and turpentine and published to the world the test which has since borne his name. In a few words his original test is as follows:

"A portion of feces is mixed with water to which has been added 1-3 of the volume of concentrated acetic acid. It is then extracted with ether. Of the acetic acid-ether extract several c.cm. are poured off to which is added 10 drops of guaiac tincture and 20 to 30 drops of turpentine. In the presence of blood the mixture becomes a blue violet, in its absence a reddish brown.

The old van Deen test gave positive reaction according to various authorities not only to blood but to (1) certain food stuffs, vegetable rests, and milk; (2) products of the body, bile, saliva, pus, etc., and (3) many inorganic substances which are used internally as medicaments.

In a long series of examinations with foods of various kinds, bile, pus, and sixty-seven different drugs, the author found that after ex-

traction with acetic acid-ether the application of the van Deen reagents gave no positive reaction except in the case of raw or partially cooked meats. He recommended, therefore, that these be withheld from the diet of those being examined. He saw no objection, however, to well cooked meats. He found that 3 c.c.m. of blood ingested was sufficient to give a decided positive reaction in the feces.

The results of Weber's observations, over fifteen years ago, have been improved upon but little. The subject received comparatively little attention from clinicians for a period of 7 years and did not receive its merited clinical significance until Boas in 1901 published the results of his observations.

The above articles present the mature observations and results of Boas and are, perhaps, all in all two of the most satisfactory publications on the subject. It was he who applied the term "occult hemorrhage" and defined the same to be a hemorrhage so slight as not to manifest itself in the feces or stomach contents by a change of color. In other words, for a hemorrhage to be occult, it must not manifest itself macroscopically or microscopically. The accidental presence of blood as from nosebleed, hemoptysis, hemorrhage from the teeth and gums, slight hemorrhages due to injuries of the mucous membrane by the introduction of the stomach tube, etc., etc., are also excluded under the term "occult hemorrhage." He recommends highly Weber's test with slight modifications, such as the use of old ozonized turpentine, as recommended by Schumm, and the addition of powdered guaiac directly to the ether, because the tincture does not keep well. Instead of the old turpentine, which cannot always be had in the proper state, hydrogen peroxide may be used, 10 to 15 drops of a 3 to 5 per cent. solution.

Boas finds Rossel's modification a reliable and useful one. It consists in the use of aloin (barbaloin) instead of guaiac, the other steps in the test remaining the same, the end reaction being a cherry red color. The affections of the gastro-intestinal tract in which blood may be found are ulcer of the oesophagus, carcinoma of the oesophagus, ulcer of the stomach in which the blood may be transitory, depending upon the condition and irritation of the ulcer, and carcinoma, in which blood is permanent in the feces regardless of the mode of living. In the intestines, ulcer of the duodenum; typhoid ulcers, tubercular ulcers, carcinoma of the intestines, etc., Boas calls special attention to the interesting fact that in both ulcer and carcinoma of the stomach, blood may be found in the feces and yet not be found in the stomach contents. This he attributes to the vertical position of the stomach and the trickling of the blood into the duodenum along the walls of the stomach without being admixed with the contents. In the observation of 257 cases, Boas and Kochman obtained negative results in chronic gastritis, atony, hypersecretion, achylia gastrica, hyperacidity and neuroses. They found the results variable in ulcer of the stomach and duodenum for reasons mentioned above. It was constantly positive in carcinoma of stomach and intestines, being found sixty-five times in sixty-seven cases.

Clemm gives a most careful review of the whole subject both with reference to technic and clinical significance. He describes in detail the acetone-haemin test of Nencki, though still preferring the guaiac turpentine test. He even suggests that it may be possible later to differentiate the blood of cancer from that of other conditions through crystallography.

Schumm, in 1906, presents an exhaustive study of the subject and recommends, after a careful review of the various tests, that of Weber with certain modifications. He first extracts from the feces the neutral fats, free fatty acid, and coloring matter with alcohol and then treating

the feces thoroughly with glacial acetic acid destroying the oxidation ferments. A portion of the ether then obtained is tested with guaiac turpentine and another portion with the spectroscope.

In 1904 O. and R. Adler described the benzidin test maintaining that it was vastly more delicate than that of Weber. 3 c.cm. of a saturated alcoholic solution is mixed with 2 c.cm. of a 3 per cent. hydrogen peroxide solution, to which are added a few drops of acetic acid and a small quantity of feces in water suspension. In the presence of blood, an intense green is the result. They found that oxydizing ferments, both animal and vegetable, give the same reaction and found the reaction positive to blood in a dilution of 1 to 100,000. On account of its great delicacy, which is not altogether desirable, and the fact that various other substances in the feces give a like reaction, the test did not meet with the support that time has shown that it merited.

Schlesinger and Holst, working in Strauss' laboratory, in 1906, succeeded in overcoming to a large extent the chief objections to the Benzidin test, through the recommendation that boiling the feces destroys the oxidizing ferments and that by taking a small definite amount of the feces the sensitiveness of the test is diminished. They recommend the following: As much Benzidin as can be held on a knife point is added to 2 c.cm. of acetic acid. To this is added 2 to 3 c.cm. of a 3 per cent. hydrogen peroxide solution. A portion of the feces as large as a pea is boiled in 1-5 of a test tube of water. Of this a few drops is added to the above reagent. A beautiful blue, or in the presence of very small amount of blood, a greenish color is the end result. The test with these modifications has become very popular and at present is pretty generally conceded to be quite reliable. Schumm, while commending the test on the whole, still prefers his modification of Weber. His objections, however, do not seem well founded and are certainly not vital, as has been shown by Schlesinger and Holst in their answer to his objections. Isler sums up completely the entire literature in a recent publication which is worthy of the perusal of any one desiring a comprehensive knowledge of the subject.

The following are a few precautions that are recommended in the application of the tests for occult hemorrhage in the stomach contents and feces:

The elimination from the diet of meats, cooked and uncooked, and meat broths for a period of three days prior to making the test; the elimination from the diet of substances containing iron, copper, iodides, bromides, etc., the use of ozonized turpentine since fresh turpentine seems to give varied results; the boiling of the feces in the Benzidin test to destroy oxidation ferments; the extraction of fats from the feces before applying the tests, and the neutralization of hydrochloric acid in the stomach contents because it interferes with the haematin reactions; a thorough cleansing of test tubes because of the possibility of contamination, for instance, with Fehling's and Trommer's reagents, etc.; the fingers should not be used as stoppers in shaking the test tubes because of sweat which may contaminate the reagents; great care must be observed in the use of the stomach tube in obtaining stomach contents because of injuries that may be produced to the mucous membrane, and thus an accidental contamination with blood; the possibility of accidental hemorrhage from the mouth and upper respiratory tract and the rectum and anus must be eliminated; it is well to see that the bowels are moving freely prior to making the test because an impaction of feces may cause slight injuries to, and hemorrhages from the mucous membrane.

THE SIGNIFICANCE OF NELATON'S LINE AND THE DIFFERENCE IN LENGTH IN THE LOWER LIMBS.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. THE ROSER-NELATON LINE AND THE CAUSES AND SIGNIFICANCE OF ELEVATION OF THE TROCHANTER.—Preiser (*Zeit. f. Orth. Chir.*, Bd. XIX, Hft. 1-2).
2. THE RELATION BETWEEN THE TROCHANTER AND ROSER-NELATON'S LINE.—Saxl (*Zeit. f. Orth. Chir.*, Bd. XVII).
3. THE ROSER-NELATON LINE.—Vogt (*Zeit. f. Orth. Chir.*, Bd. XVI, Hft. 3-4).
4. HEINE'S OPERATION OF CONTINUITY SHORTENING TO COMPENSATE FOR DIFFERENCE IN LENGTH IN THE LOWER LIMBS.—Deutschlander (*Zeit. f. Orth. Chir.*, Bd. XIX, Hft. 1-2).
5. CONTINUITY-RESECTION OF LONG BONES TO COMPENSATE FOR SHORTENING.—Glaessner (*Zeit. f. Orth. Chir.*, Bd. XIX, Hft. 1-2).
6. INCREASE IN LENGTH OF THE WHOLE FEMUR FOLLOWING WHITE SWELLING OF THE KNEE.—Mayet and Bourganet (*Arch. d. Med. des Enfants*, Tome X, No. 5).
7. CONGENITAL BENDS AND PSEUDOARTHIROSES OF THE LEG.—Gashe (*Revue d'Orthopedie*, May and July, 1907).

Preiser has made observations on one hundred living normal persons and has shown that Nelaton's line and the elevation of the trochanter of the femur have not the diagnostic value in determining pathologic conditions at the hip joint that has been generally conceded. In his series of cases he found the trochanter above the line in one-half. He also examined 103 specimens in a museum, placing a stretched string between the anterior superior spine of the ilium and the tuberosity of the ischium and observing its relationship to the acetabulum. In 43 of these cases the relations were what is regarded as normal; the remaining 60 cases he divides into two groups:

In the first group the acetabulum was placed in the frontal plane, was very shallow and caused the trochanter to be above the line, due to the fact that the femur rotated backwards in order that the foot might be placed in the sagittal plane. This group contained 29 per cent. The second group, made up of 28 per cent., revealed an acetabulum placed dorsally, resulting also in elevation of the trochanter above the line. The author concludes that elevation of the trochanter may take place without a change in the angulation of the neck and shaft of the femur, and may be due to either dorsal displacement of the acetabulum, mesial displacement of the acetabulum, or a shortened femoral neck. Saxl has also observed that there are cases where the angle and neck of the femur are normal in which the trochanter is above the Nelaton line, and that this may be due to the fact that the neck of the femur is short, or that the trochanter is over-developed, or that these two factors may occur together. To offset the danger of error in making nice measurements at the hip, he suggests that the thigh be flexed to a right angle, that it be neither abducted nor adducted, neither inwardly nor outwardly rotated. This position brings the upper edge of the trochanter under normal conditions on the line. Voigt has investigated the value of the Nelaton line on the cadaver by an exact system of measurements, and has found that in full extension of the leg where there is neither inward nor outward rotation, that the trochanter falls slightly below

the line. In order to cause it to fall on the line abduction is necessary, the amount of which varies in different individuals. If the thigh is flexed, however, to an angle of 135° without abduction or adduction, the trochanter will fall 0.5-1 cm. above the line, adduction being necessary to cause it to fall on the line; the amount varying also with the subject. He suggests the value of a method of measurement used by Lange, wherein the crest of the ilia and the trochanters are marked out on both sides with a colored pencil. The patient then stands or lies face downward. If there is difference between the two sides, it can be noticed at a glance and comparative measurements can be easily made.

Heine devised an operation for obtaining shortening in continuity to compensate for difference in the length of the lower limbs. Deutschlander has reported three cases in which this operation was done. The operation necessitates careful measurement in order to ascertain the amount of shortening to be required. When this is determined, an exact amount of bone is removed and a small aluminum splint is placed between the fragments, being held in place by two screws. This is removed at the end of four weeks, and the wound allowed to heal. The three cases reported were good results. Glaessner also reports three cases where an operation was done to compensate for shortening. One had shortening due to congenital dislocation of the hip, the second to a badly united fracture of the femur, and the third due to an operation. An oblique osteotomy was done on the femur on the healthy side of these cases, and the bone fragments were allowed to over-ride until the leg was of equal length with its fellow. Glaessner is of the opinion that each of these cases presents an individual problem which must be solved according to the mechanical conditions to be met.

Mayet and Bourganell have reported an interesting case which sheds some light on the pathology of disturbance of growth causing inequality in the lower limbs. The patient was 7 years old; had tuberculosis of the knee, which was treated for two years by fixation and plaster; at the end of 3 years more, during which time there was no treatment, the limb was discovered to present muscular atrophy and a lengthening of the femur of 4 cm., the tibiae being equal in length. Careful measurements on radiograms revealed an increase of 1 cm. in the height of the epiphysis at the knee and a lengthening of the adjoining portions of the diaphysis equal to about $\frac{1}{2}$ cm., while the neck and shaft of the femur formed almost a straight line. This accounts for the lengthening, and demonstrates the fact that developmental abnormalities of the epiphysis adjoining an affected joint does not entirely explain the lengthening in these cases, but that the absence of pressure due to immobilization and non-weight-bearing, resulting in an increase in the angle at the neck of the femur, plays a very significant part.

Gasne has pointed out the importance of congenital bends and pseudoarthroses of the leg as a cause in inequality and deformities of the lower extremities. He believes that arrested development is an explanation of these conditions, and that they are not due to intrauterine fracture. Congenital bends of the tibia most often occur at the junction at the middle and lower thirds without abnormal mobility. Congenital pseudoarthroses may not be evident at birth but may appear several years later after slight trauma. Congenital bends should be treated by protective apparatus, as forcible correction is apt to be followed by pseudoarthrosis. In severe cases, apparatus applied for weight-bearing is often not well borne by the poorly nourished limb, and a plastic bone operation or amputation is necessary. Pseudoarthroses demands apparatus, protecting or stimulating measures, or amputation. Where the bones are fairly solid, bone operation offers a fair chance of firm union.

THE PARATHYROID GLANDS.

A REVIEW OF RECENT LITERATURE.

By CARL FISCH, M. D.

1. Thomson (*Amer. Jl. of Med. Sciences*, Vol. 134, 1902).
2. Forsyth (*British Med. Journal*, May 18, 1902).
3. Vincent (*Lancet*, August 16, 1906).
4. Richard (*Virch. Arch.*, Band 191, Helt 1).
5. Geztown (*Virch. Arch.*, Band 188, 1907).
6. Erdheim (*Grenzgebiete der Medizin u. Chirurgie*, Vol. 16, p. 633).
7. Ungerman (*Virch. Arch.*, Vol. 187, 1907).

The interest in the function of the parathyroid glands and of most of the other so-called glands with internal secretions, has lately increased greatly, and during the last three years the number of published articles upon this subject has been so great that a general review of them all would fill a large volume. In the following remarks, therefore, only the publications that bear upon the morphologic and the histogenic characters of these formations or organs can be dealt with, leaving aside, almost altogether, the investigations into their functional quality and the efforts made to prove its existence by experimental work, leading finally to the production of specific sera. This phase of the subject may be discussed in a future number of the JOURNAL.

Present interest lies in the discussion about the specificity of the structure and position of the two organs, the thyroid and the parathyroid, histogenetical or developmental and functional. Opinions differ in regard to the effect of loss of these organs and it is only the biologic study of the character of the structures which makes it probable that we must adhere to the theory of a specific difference between them in both instances. As we have already said, the biologic investigation has made this almost positive, although we must not forget that biologic research along these lines is surrounded with so many obstacles and obscure phenomena that we can not regard as incontrovertible any conclusions arrived at as a result of such investigations. As an instance of the instability of such conclusions, we may refer to the hypothesis that, among others, the picture of a paralysis agitans is produced by certain changes in the structural character of the parathyroid glands. Thomson's investigations have shown us that such a relation does not exist. It is usually the structure and changes of tissue of these structures that occupies us in the discussion of work in this direction, and here the anatomic as well as the histologic qualities are to be considered. The question whether parathyroid and thyroid are developmentally and histologically different tissue complexes was not raised until the work of Forsyth and Vincent became known. Both these authors insist upon the correctness of their interpretation of their findings in human and animal tissue, that transitions in the tissue qualities of these two organs can be demonstrated. In view of the fact that the developmental origin of both is as yet not definitely settled, whether both arise from the tissue of the same bronchial cleft or from two different ones, such an assertion can not be accepted as the expression of real processes, because anatomic relations of the parathyroid to the thyroid vary greatly. While the ordinary

location of the first is a definite one in many instances, there are so many observations of a different location of one or the other of them that a regularity in this respect can not be considered. On the other hand, it is very often found that a whole and perfectly normal and definite parathyroid is imbedded in the substance of the thyroid, and from this finding to small portions of parathyroid tissue from small nests to more massive quantities of parathyroid tissue in thyroid tissue have been observed very frequently. It must be remembered that in the region of these organs, as is well known, many displacements of other structures also occur, for instance the finding of typical thymus foci in the thyroid and parathyroid. As most of these nests of parathyroid within the thyroid are definitely defined from the latter, very often surrounded by a distinct connective tissue capsule, a transition between the one and the other is never observed. The latest and most conclusive study of this occurrence was made by Richard, who conclusively demonstrated the independence of those misplaced areas of parathyroid tissue from the tissues of the thyroid. Geztown maintained that the epithelial cells of the parathyroid are of four different types, while Forsyth demonstrated that the different appearances and character of these cells were only the expressions of the stage of activity or rest of these glandular elements, the same as is observed in other glandular structures, for instance the pancreas. The same author, however, has found that the character of the secretory products can not be distinguished, either physically or microchemically, from that of the thyroid. He has not, however, investigated the presence or absence of iodothyroin in the parathyroid, the presence of colloid alone is of no meaning. It must be said also that no other observers besides Forsyth have ever found colloid in a parathyroid tissue.

The histology of the parathyroid has been, until recent years, clearly established. Through the study of Thomson on a great number of these organs a clear understanding of this question has been reached, and differentiates the two organs definitely. With this in view the suggestions of Forsyth ought to be critically investigated.

The pathologic changes in the parathyroid that have been described, consist in alteration of the epithelia,—as degeneration or atrophy,—in changes of the connective tissue stroma and its bloodvessels. Inflammatory processes are also found, not primary infections but always in connection with a process elsewhere in the body. For the thyroid the same obtains.

The relation of such pathologic alterations to certain diseases has been made the object of a great deal of observation and experimentation. For the latter the conclusions have been to a high degree, in many cases, contradictory. This may be explained by the well-known uncertainty of the location of the glands, their variability in number and the rather frequent occurrence of misplaced parathyroid tissue into the thyroid. So even the removal of all of the four glands does not always give the certainty that all of the specific tissue has been eliminated; a small focus existing somewhere in the neighborhood will necessarily vitiate the conclusivity of the experiment. Many, for instance Forsyth himself, have abandoned rabbits on account of the great variation in number and location of the glands in these animals. Erdheim, for this reason, selected white rats for his work, as they have only two parathyroids and these almost always in the same place. The presence of accessory parathyroid tissue is in these animals easily excluded by making serial sections through their neck, that in these animals is very thin. The

consequence of these difficulties is that for no diseases circumstantially related to the parathyroid function, has there been established thus far any conclusive evidence for this etiology. Even for tetany, in children and in grown persons, the results of the study of the glands are not uniform, so that some writers have been forced to assume only functional alterations that do not express themselves by histologic changes. Although the coincidence of lesions of the parathyroid and tetany is certainly very convincing, we cannot yet conclude that every case of tetany is based on this causation. That in rabbits and other animals, by ablation of the thyroids, tetany can be produced, and that the introduction of extracts of the glands of parathyroid, proves that animals may be prevented from acquiring tetany, is true. But whether this is really the cause or only a coincidence can not be decided at present although the probability of its correctness is very great. Chronic lesions of these organs are certainly frequently found after death without any signs of tetany or other disturbance during life. On the other hand cases have been reported but they were cases with absent or very small thyroids, showing no symptoms either of myxedema or tetany, and on autopsy the explanation was found in a case lately reported by Myermann, as a tumor of the size of a chestnut at the root of the trunk. The parathyroids were normal. This is to be considered, according to the author, as evidence for the difference of function of the thyroid and parathyroid. Thomson reports 12 cases of infantile atrophy, that were mentioned before, finding changes in the parathyroid mainly fibrous. He discovered similar conditions in other ductless glands of the same cases, but is careful not to connect directly these findings with the general atrophic condition of the infants.

The subject of specific treatment by serum is still in its infancy. It promises, however, to elucidate in the future the question whether alterations of function or structural changes of the parathyroid glands are really at the bottom of diseases that indirectly suggest this origin.

DIAGNOSTIC AND THERAPEUTIC NOTES.

TREATMENT OF SCABIES.—Franz Nagelschmidt (*Med. Klinik*, 1907, No. 35).—To procure a rapid and certain result in the treatment of scabies, it is necessary that the remedy used does not irritate the skin; yet it must penetrate rapidly and kill not only the acarus, but also the ova. A new remedy, fulfilling these requirements, is thiophinol; it is used in the bath and as a 5 or 10 per cent. ointment. The technique is as follows: The patient takes a thiophinol bath of 30 minutes' duration, and immediately after this he is carefully rubbed with 30 to 40 grams of a 10 per cent. thiophinol ointment. The same ointment is applied once daily for the next two or three days, and on the fourth or fifth day a bath is taken, as in the beginning. In this way a cure may be accomplished in five days, and a secondary dermatitis, due to the remedy, is never seen. Thiophinol has the advantage over other sulphur preparations in that it penetrates the skin more easily and is far better resorbed. Healthy individuals with an intact skin, when taking a thiophinol bath, show a large amount of eliminated sulphur after one day.

THE PROGNOSTIC VALUE OF BLOOD PRESSURE IN PULMONARY TUBERCULOSIS.—A. B. Marfan (*Rev. de médecine*, November, 1907).—In pulmonary tuberculosis the blood pressure is usually low. In those cases, however, in which it is high, we can make, according to Marfan's investigations, a good prognosis. Such a finding means that the tuberculous process is on the high-road to a clinical cure. He has found hardly any exceptions to this rule and believes that the behavior of the blood-pressure gives us our most trustworthy prognostic information in pulmonary tuberculosis. A very low blood-pressure is of ill omen and indicates a rapidly progressive infection. This rule has however more numerous exceptions than its converse; a low blood-pressure does not always exclude the possibility of a cure. In his blood-pressure work, Marfan used the Potain sphygmomanometer applied to the radial artery with the patient in the seated posture.

TREATMENT OF MORBUS BASEDOWII.—C. Mes (*Nederlandsch Tydschrift voor Geneeskunde*, 1908, I., No. 16) recommends goat's serum in morbus Basedowii. He reports the case of a female patient suffering from Graves' disease, in which all the cardinal symptoms were present; i. e., exophthalmus, goitre, tremor, tachycardia, dilatation of the heart, irregular pulse (so frequent that it was hard to count), lack of appetite, diarrhea and loss of weight. Bromides, iodides, quinine, iron and strophanthus, had no effect whatever. The writer removed from a goat the glandula thyreoides and had the patient drink the milk of this goat for six weeks, while for three weeks afterwards 5 cc. of the serum of the goat were taken daily in a glass of Malaga wine. Very little improvement took place, which suggested that the glandula thyreoides had not been entirely removed. The same operation was therefore done in a second goat and care was taken that this time the entire gland was removed. Patient again took the milk and 5 cc. of the serum daily at the same time. Patient improved slowly, but constantly. All the symptoms of the disease disappeared gradually and the patient is now entirely free from any symptoms; her weight, which was 53 kg. at the height of the disease, increased to 85 kg.

DIFFERENTIAL DIAGNOSIS BETWEEN EXUDATE AND TRANSUDATE.—W. Janawski (*Berl. klin. Wochenschr.*, No. 44, 1907).—An easy method to differentiate between these two is the following: A few drops of the fluid to be examined are dropped into a solution of 2 drops of glacial acetic acid in 100 cc. of water. If an exudate, a white or whitish-blue streak is produced, sinking gradually to the bottom and forming a whitish precipitate. If a transudate, nothing is seen, the drops dissolving completely before reaching even the middle of the solution.

TELERÖNTGENOLOGY.—Alban Köhler (*Deutsche med. Wochenschrift*, 1908, No. 5) describes a new method for examination of the location and dimensions of the heart by means of the Röntgen ray. The x ray tube is placed at a distance of 1.5 to 2 meters from the thorax, so that the rays go through the thorax practically parallel. It is possible to photograph the heart in its true dimensions by this procedure. The method, simpler than the orthodiagraphy, has the advantage that not only some points of the heart but the entire circumference of the heart appears on the plate.

LATENT CANCER OF THE CECUM. Lereboullet and Tixier (*Société Médicale des Hopitaux*, March 13, 1908).—At a recent meeting of the Société Médicale des Hopitaux of Paris, Lereboullet and Tixier report an instructive case of a man in whom, for over a year, the only symptom of a cancer of the cecum was apparently a marked anemia. Although towards the end of the patient's life some intestinal disturbances were added to the anemia, it was only the autopsy that revealed the presence of a very small and non-adherent cancer at the cecum. The anemia, moreover, was not at all of the type characteristic of cancer, being marked by a leucopenia and the presence of numerous nucleated red cells. As the writers point out, this case shows that just as we have gastric cancer revealing its presence only through an anemia, so we may have analogous cases of cecal cancer without other symptoms. Moreover it shows that the distinction between a carcinomatous and a primary anemia is by no means always so sharp as we like to assume. In the discussion, Gailhard reported a case of gastric cancer without any digestive disturbance and characterized only by a marked anemia.

THE MODE OF PRODUCTION OF THE PRESYSTOLIC MURMUR IN MITRAL STENOSIS.—Colbeck (*The Practitioner*, February, 1908).—Many different theories have been advanced to explain the occurrence of the presystolic murmur in mitral stenosis but none of them seems quite satisfactory. Colbeck believes, on the basis of extensive anatomical and clinical work, that this murmur is due to vibrations set up in the large anterior flap of the mitral valve during auricular systole. The short, sharp first sound heard in mitral stenosis must be due to the abnormally sudden and forcible closure of the mitral valve, which is occasioned by the ventricular systole. The closure of this valve is more violent than usual, for the reason that the large anterior curtain exposed to the impact of the inflowing blood stream is not floated up so near to the mitral opening during the filling of the ventricle as under normal conditions, and with the occurrence of the ventricular systole the vibrating flap is suddenly and forcibly impelled into the position which it occupies during the closure of the valve. This explains the sudden cessation of the murmur and the occurrence of the short, sharp first sound. When the anterior flap of the mitral valve is destroyed or is so tied down as to be unable to vibrate, we have the presystolic murmur disappearing entirely, an observation often made in mitral stenosis.

CORRESPONDENCE.

LONDON LETTER.

[FROM OUR OWN CORRESPONDENT.]

It is most sincerely to be hoped that the wish expressed by Lord Mount Stephen, in making his munificent donation to King Edward's Hospital Fund, may be speedily realized. Municipal hospitals may, and as a matter of fact do, succeed excellently well in Germany, the paradise of regulations, but in this country the practical application of such a scheme, although most undoubtedly equitable in theory, would be overwhelmed with difficulties. The actual purpose of the hospitals would be ground out of very existence between the upper millstone of over-zealous economy and the nether one of bumbledom (now yclept Moderate or Municipal Reform). The realization of the King's original idea will not only save the hospitals from so dire a fate, but in the Board administering the funds is contained the germ which, under suitable conditions, may eventually develop into a central authority controlling, co-ordinating and bringing into proper organization that *bête noir* of hospitals—the out-patient department.

A battle is raging between Sir Victor Horsley and Mr. Coroner Troutbeck over the subject of inquests on cases which have succumbed after operation. The *punctum saliens* in such cases is whether death has been accelerated or not by the operation. In the former case an inquest is required, in the latter it is obviously unnecessary. Mr. Troutbeck, however, claims that an inquest is always necessary, not only to determine whether death was accelerated, but also to ascertain if anyone has been guilty of negligence or want of skill. Mr. Troutbeck is a lawyer and has been a Coroner for some years. He has a very high opinion of the importance of his exalted office, and has very decided views as to the strictly subordinate position in which the medical profession should be kept in relation to himself. In cases of sudden death he persistently ignores the local practitioners, who in many instances could give him pertinent information, and requisitions the services of an alien from Vienna, a *soi-disant* pathologist, who happens to be his son-in-law. In pursuance of his views on the subject, he summoned Sir Victor Horsley to give evidence at an inquest as to the operation he had performed. In acting as he does and threatening to carry the matter still further, Mr. Troutbeck may be all unconsciously bringing about a change which has for long been desirable. Coroners and their intelligent juries are an utter anachronism and ought to be replaced by the excellent system adopted in Massachusetts, and in several other States of the Union. In the meantime Mr. Troutbeck has taken on rather more than he can manage in crossing swords with one so skilled in fence as Sir Victor.

The Oliver-Sharpey lectures at the Royal College of Physicians were delivered this year by Professor Schäfer, now of Edinburgh University, but formerly of University College, London, who selected for his subject the present condition of our knowledge regarding the functions of the supra-renal capsules. The subject is one of exceeding interest in view of the wide-spread use nowadays in practice of supra-renal extract,

and it was dealt with in masterly fashion, as all who know the Professor would expect. After giving a short account of his old master Sharpey, for many years Professor of Physiology at University College—in whose honour the lectures were founded by Dr. George Oliver—and relating the history of the investigations into the supra-renal capsules which have been carried out during the last four-and-twenty years, the lecturer sketched out in broad outline the evolution of the ideas as to the functions of these bodies and endeavoured to find an answer to the question propounded by the Academy of Sciences of Bordeaux in 1716, "What is the use of the supra-renal glands?" The competing essays sent in at that time were submitted for judgment to Montesquieu. As far as the medulla of these organs is concerned much has been determined, but "our knowledge of the action of the cortex of the capsules is very much in the position which it occupied forty years ago—indeed, one may say in the position it occupied in the time of Montesquieu." It was first pointed out in 1894 by Professor Schäfer, working in collaboration with Dr. George Oliver, that the function of the capsules is to provide an internal secretion, and also that while extracts of the supra-renal cortex are apparently physiologically inactive, those made from the medulla produce a vaso-constrictor action on the peripheral vessels. It is the latter extract which has been subjected to so much investigation of late years and Professor Schäfer proposes that the active constituent of this particular extract shall be called "Adrenin," being a name "without commercial attachments" and, moreover, "it is hardly possible to use a term which will signify the precise chemical constitution of the active substance, this constitution being somewhat complicated." The styptic action of adrenin was first noted and made use of by Oliver and Schäfer in their joint researches into its action upon the blood-pressure. And "one of the most striking facts relative to this styptic action is that, although, when given by the mouth, no evident change occurs in the blood-pressure, there is very distinct evidence of vascular constriction for bleeding from internal parts, such as the stomach, intestine, bladder, and uterus, even the bleeding of *post-partum* hæmorrhage may thereby be effectually controlled. The explanation of this which most readily presents itself is that injured vessels are more susceptible to the extract, and react to a slight excess more readily than do normal vessels." After dealing with the stimulant effect upon the sympathetic system—the difficult point to determine being whether the apparatus or material specially excited by adrenin is limited to the region of the original nerve terminals, or is diffused through the protoplasm—and alluding to the connection of the extract with glycosuria, the lecturer passed on to consider the action on the vessels observing that "the most marked and probably the most important effect of supra-renal secretion in the body is to increase the contraction and maintain the tone of the vessels." This effect varies in the different areas, being greatest in the splanchnic area, and less in the limbs, in which, indeed, passive expansion may be caused by rise of blood-pressure due to the contraction of the arterioles in the splanchnic area. On the pulmonary vessels the effect is far less than on the systemic, and Schäfer sees no physiological contra-indication for its use in assisting to arrest hæmoptysis, when the bleeding is derived from rupture of small vessels, if given by the mouth. The same applies to the cerebral vessels. As to the coronary circulation, the subject is one which requires further examination. At present, the evidence obtained is that it has no action, either constricting or dilating. There can be little doubt that the supra-

renals are related in some way to metabolic changes in the tissues, as indicated by the symptoms of Addison's disease. The extreme wasting and the malnutrition expressed in the abnormal pigmentation of the skin and mucous membrane are not readily referred to the medulla and are probably the result of disease of the cortex. There is some ground for inferring that the cortex may yield a "hormone" which influences the growth and nutrition of certain tissues and organs. Schäfer suggested the integumentary tissues and the generative organs, but declined to plunge further into conjecture, leaving it for a successor to point out "as much positive knowledge regarding the cortex as we now possess regarding the medulla, the function of which seemed no more than fifteen years ago as obscure as that of the cortex appears at present."

July 10th.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

Perforation of the intestine by ulceration of Peyer's patches, constituting as it does the most formidable of the numerous complications of typhoid fever, is at present engaging the attention both of doctors and surgeons. Among recent contributions on the subject, that of Professor Chantemesse, physician of the Typhoid Fever Hospital, recently communicated to the Paris Surgical Society, is without doubt the most interesting. Professor Chantemesse has observed about 2,000 cases of typhoid fever, of which number there were 35 instances of perforation.

According to his clinical observations, the author arrives at the conclusion that none of the signs which have hitherto, in the classical descriptions of the disease, been attributed to intestinal perforation, rightly belong to it; they are really indications of a peritonitis, and can in fact be noted in cases where there has been no perforation. This is also true of the following symptoms: intense localized pain, disappearance of hepatic dullness, nausea and vomiting, lowering of temperature, quickening of the pulse, and a changed facial expression. Sometimes this complication develops in an insidious manner and then the diagnosis is fraught with difficulties. This being the case are we justified, on the suspicion of a possible perforation, to turn the case over to a surgeon so that the abdomen may be opened, the perforation searched for, and occlusion effected?

If no symptom is pathognomonic of the intestinal perforation complicating typhoid fever, there are nevertheless certain signs which, though small in number, may, if sufficiently acute, have considerable and decisive importance. These are severe pain or intense enough to be localized; retraction of the stomach, and a limited renitency on pressure, indicating at first the possibility of a perforation but not establishing a diagnosis. In the course of some hours, and according to the more or less rapid development of the complication and the intensity of the peritonitis, the abdominal hardness increases, the hepatic dullness disappears, the pulse accelerates, the temperature rises, the facial expression becomes more fixed, and vomiting sets in.

As regards the prognosis of intestinal perforation supervening in these conditions, should we consider it as hopeless, as we have been taught by those whose studies are regarded as classical? Is death inevitable? M. Chantemesse is of the opinion that there has been too much exaggeration for, under treatment, the prognosis is not always unfavorable. That

spontaneous recovery is possible is undeniable. Adhesions to the omentum, to an intestinal loop, to the abdominal parietes, may definitely close the orifice of a perforation. Occasionally the perforation is healed by the formation of an artificial anus. The symptom which should act as the best guide for the doctor is the acceleration of the arterial pulsation: death being a certainty when the frequency of the pulse augments regularly despite the apparently stationary state of the other symptoms. In case the doctor is in doubt he ought to bide his time for, as has only too often happened, surgical intervention may aggravate, instead of ameliorate, the disease. Moreover, certain small perforations get well spontaneously without surgical interference.

As to the question of treatment—and Professor Chantemesse's experience makes him an authority—he holds that to evade the possibility of surgical intervention, recourse should be had to two special therapeutic procedures, of which the physiological end is to increase the number of leucocytes and the peritoneal phagocytes. The first procedure, which is Mikulicz's, consists of the subcutaneous injection of a sterilized solution of nucleinate of soda which, in doses of 50 centigrams administered three times in 24 to 36 hours, produces an onset of transient aseptic fever with increase of white corpuscles in the blood and the peritoneum. In those cases where the microbic culture of the peritoneum is decidedly weak, the afflux of leucocytes shows that the nucleinate of soda causes the desired defense on the part of the serum against infection.

This artificial leucocytic reaction should be combined with a second method of treatment, which consists in intermittently keeping the serum at a high temperature. The effect of this overheating dilates the abdominal capillaries, facilitates diapedesis, increases the activity of the ameboidic movements of the leucocytes; in a word, strengthens the natural defenses of the organism. To achieve the heating of the abdomen the means are very simple: an ordinary ring is used to secure the bedclothes, on the inner side of which is placed a hollowed copper receptacle containing hot water. This apparatus is kept in place from an hour to an hour and a half; the application being renewed two or three times in 24 hours. The benefits accruing from this treatment are, disappearance of pain and the re-establishment of peaceful sleep. The modifications are, movement of the bowels, micturition, lessening of the abdominal distention, and decrease of the peritoneal pain. Under the influence of the nucleinate of soda and the heating of the abdomen, the symptoms are ameliorated in the majority of cases, and after eight days of treatment a cure without an operation is highly probable.

In accordance with what we at present know of the subject, surgical intervention ought to be limited to those cases of intestinal perforation which begin at once with manifestations of a severe peritonitis, and where the symptoms are not lessened in intensity after a few hours. If, as has been said, the use of the bistoury is a declaration of an avowal of weakness, the judicious employment of the two therapeutic methods advocated by M. Chantemesse should be instrumental in diminishing the number of cases where, heretofore, surgical intervention was thought the proper procedure in the treatment of certain complications as they arose in the course of typhoid fever.

July 10th.

OBITER DICTA FROM FOREIGN JOURNALS.

CRIME AND CAPITAL PUNISHMENT.

In his latest book "La peine de mort et la criminalité," Professor Lacassagne shows that he is decidedly in favor of the re-establishment of the death penalty in France. His reasons are excellently put and as for their cogency, admirers of the author's former works will not feel any disappointment. In a recent number of *La Province médicale* appeared an exhaustive review of the book from which the following is excerpted:

Statistics show that the recrudescence of murders which at present obtains in France, will, if it continues, be a disquieting factor in French social life. That the increase in the number of crimes can be laid at the door of alcohol, goes without saying, for under its influence are born the abnormal, the degenerate and all those who have antisocial tendencies. Therefore it behooves society not to disarm in the face of those who have no respect for human life. Moreover, statistics do not tell the whole truth. To complete the list of crimes committed against persons it is necessary to add to those mentioned in the statistics, criminals who have not yet been sentenced. For instance in 1905 out of 355 assassinations and 761 murders, only 169 criminals were sentenced for the former and 274 for the latter. This reckoning would leave 186 assassinations and 487 murders still to be tried. Reprieves, conditional liberation and banishment have not repressed crime to any great extent. As Professor Lacassagne says: "Criminals see in these measures only signs of weakness and fear, since they are too hardened to be easily intimidated. What should they fear? Capital punishment is no longer enforced and then the prisons are such comfortable places! As for the penitentiaries, do they require the hard labor which was once quite insupportable?" And yet in the face of all this crime, society grows more and more tolerant from day to day until the time has now arrived when the persecuted criminal is quite the *rara avis*.

The time is at hand when one may demand in all fairness "if these procedures of indulgence and kindness can be indefinitely applied in a society where uncontrollable impulses and unreasonable disorder, both the offspring of alcohol, are in open revolt against the law?" M. Lacassagne answers his own question in a forceful manner by declaring that "la manière forte" (the strongest means) should be employed. He is of this opinion because though crime is on the increase, the repressive methods as they are to-day, are characterized by diminishing severity. To support his contention that too great an indulgence is shown to criminals, he cites statistics covering about a century. In the reigns of Charles X. and Louis Philippe from 1826 to 1848, commutations amounted to 36 per 100; during the Second Republic, 39 per 100; under Napoleon III. from 1852 to 1870, 46 per 100; during the presidency of Thiers and Marshal McMahon 66 per 100; while Grévy, Carnot, and Félix Faure were presidents from 1881 to 1900, 65 per 100; and finally under Loubet from 1900 to 1906 the number reached 91 per 100. As is well known M. Fallières commutes all those condemned to death. After reading these truthful statements, should we criticize M. Lacassagne for

stating that "the intimidation and the example resulting from capital punishment are effective only when it is often and inexorably applied."

The Restoration is a good example of a time when strong repression was followed by a decided decrease in crime. M. Lacassagne firmly believes that the triumphant march of crime can be stopped only by a rigorous application of capital punishment. The fear of no mercy in the way of commutation would surely arrest the arm of the assassin. To show that there may be a grain of truth in all he says, he is most anxious for the government to make the experiment of abolishing commutation for capital punishment, for a period of six years. The statistics gathered during this period would be the best lesson as to the real efficacy of enforcing capital punishment.

THE GRAVE OF AN OLD COLLEAGUE.

The grave of a physician, who lived 39 centuries ago, the *Lancet* says, has just been discovered in Egypt. The inscription upon his tomb informs us that his name was Nefery. An inventory of the contents of the grave disclosed a rich collection of articles. There were found, besides signs of his profession, a box containing writing pens, two ink bottles, one for red ink and one for blue ink, and a small desk painted and polished in such a way that notes made on it could be wiped out. The inscription tells us that Nefery was a follower of Osiris. His sarcophagus is now placed in the museum at Cairo.

THE NEW CATHETER.

In J. B. van Helmont's "Dageraad oft Nieuwe Opkomst der Geneeskunde," Amsterdam, 1659, there is an interesting chapter, beginning at page 266, descriptive of "Den Nieuwen Catheter" (The New Catheter). To quote: "I saw that the urine was drawn through a bent, silver tube, which was made more rigid by means of a silver thread within. This procedure was very painful, while severe bleeding often took place and on several occasions it was impossible to introduce the instrument into the bladder. The instrument was called 'A Catheter.' I bethought me for some time of using some other material for a catheter but never found any better than the sort that could not be bent without causing pain to the patient and whose introduction demanded considerable skill on the part of the operator. Finally I took narrow linen tape and put this in melted bleached bees-wax. Both sides of the waxed tape were then varnished with linseed oil, which had been boiled with lead oxide. When prepared in this way the wax tape was sewed with a flat seam around a copper thread, making a tube of any length desired. This tube is made more rigid by means of a sound, consisting of whalebone and the outside is varnished once more. Such a catheter can be bent and can be introduced many times a day if necessary. When the catheter is passed through the sphincter of the bladder, the sound is pulled out while a syringe is attached to the part outside. In this way I can empty and fill the bladder as required. A catheter for women should be of larger size but shorter, as the opening to the bladder is practically on the outside. A female catheter is called 'dyoptrinum'—but I do not care for these different names. This is what I want to report for the benefit of all. Somebody else, who is more gifted than I am, will improve my instrument—if God approves of it. 'His name be praised.'"

HISTORICAL NOTES.

SCHILLER AS A PHYSICIAN.

Among the literary men who began their careers as physicians, one would hardly look for that apostle of the Romantic Period in German literature—Friedrich Schiller. But Schiller was the son of an army surgeon, and so thoroughly imbued was his father with the idea that his son should follow in his footsteps, that even decided manifestations of a special aptitude for poetry could not swerve him from his set purpose. Of course it is not difficult to understand that in a case where, as in Schiller's, his mind was on other matters, brilliance would not



FRIEDRICH SCHILLER.

characterize his studies. That this was so is made evident to us in Heinrich Düntzer's "Life," for we read: "At the last examination Schiller had taken no prize, although in anatomy he ranked in equal merit with three others. The lot fell to Elwert; Hoven also gained two prizes. As, however, Schiller's progress satisfied his superiors, he was commissioned to prepare a competition essay for the following autumn, which, if successful, would, so he hoped, secure his dismissal. The subject he chose was one dear to him—The Influence of the Body Upon the Soul. Nevertheless, neither he nor his comrades were suffered to

leave the academy in that year; the duke decreed that they should remain there for another twelve months."

To show more clearly how far his mind was removed from his studies, the great joy he experienced on meeting Goethe for the first time is not without point. In the words of a well-known biographer, "Schiller's heart swelled within him at the sight of Goethe, the favorite of the Muses. Schiller must have drawn deep encouragement and inspiration on seeing the man whose voice had rung so stirringly in the cause of liberty and the pure instincts of humanity, yet who had thus early reached so high and honored a place in life." Is it at all surprising that the five subsequent years of the poet's life—years devoted to the narrow and rather prosaic career of an army surgeon—should have always been recalled as the saddest in his whole career? This is easy of comprehension when we remember that already at the medical school the poet's brain was seething with the subversive social ideas of that strange medley of bombast and exaggerated romanticism—*The Robbers*. Now what young doctor, starting out on his hazardous career, could retain, under such extraordinary circumstances, the required sanity, without which the practice of medicine is not only uphill work but resolves itself into the dimmest of callings, with failure written in large letters across its open pages.

That the poet was driven into the practice of medicine by a father whose discipline and military training blinded him to a sympathetic appreciation of unusual gifts, is a lesson in point that has its congeners even in our day. It does not take a deep or very philosophic observer to note that the failures recorded in the world of medical men are oftenest due to the fact that, following advice from parents or intimate friends, men specially unfitted for the calling have embraced it, only to find out, when it is really too late to mend matters, that had they followed the promptings of their own instincts the history of their lives might have been written with a few capitals. Of all natures the poetical has the least adaptability to the prosaic exigencies of the medical man's career, for if there are two callings which are characterized by qualities diametrically opposed to each other, they are surely medicine and poetry. Friedrich Schiller's life contains many things of interest, especially to the student of literature, but the lesson of all lessons for medical men which emanates from it across the many years which have elapsed since his student days, is the tragic one of following a calling, not as he did for a few years, but for a lifetime, as some of us have done and will do, to which we cling from a false sense of duty engrafted upon us by the iron grip of circumstance and the fear of public criticism.

BOOK REVIEWS.

SURGERY: ITS PRINCIPLES AND PRACTICE. In five volumes. By 66 eminent surgeons. Edited by W. W. Keen, M. D., LL.D., Hon. F.R.C.S., Eng. and Edin., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Phila. Volume III. Octavo of 1132 pages, with 562 text-illustrations and 10 colored plates. Philadelphia and London: W. B. Saunders Company, 1908. Per volume: Cloth, \$7.00 net; half morocco, \$8.00 net.

This volume is of a high-grade of excellence throughout, the collaborators in almost all instances being the acknowledged authorities on the subjects they treat upon.

Harvey Cushing has the chapter on the "Surgery of the Head," which is exhaustive, covering the subject in a manner that leaves room for little more in the present status of our knowledge. Part I. deals with the External Coverings of the Skull, and Part II. with the Cranium. He considers fractures in a way that will hold the interest of the reader because of a clear descriptive ability, which enhances the thoroughly practical import of the matter. His unilateral or bilateral intermusculotemporal operation in diffuse hemorrhage in basal fractures and his operation for intracranial hemorrhage in the newborn are clearly and well considered. Part III., Meninges and Ependyma, contain three sections of particular note, namely, Hydrocephalus, Sinus thrombosis and Meningitis. Part IV. on the Brain is the most comprehensive and the author reviews here much of the work he and others have done in physiology of compression and localization, and cranio-cerebral topography. After reading the section on Intracranial Hemorrhages and Cerebral Tumors there is a brighter view of this field than ever before. The palliative operations of decompression in unlocalizable growths are often followed by brilliant success, with relief of the general symptoms for long periods and allowing later operation in some cases when the growth becomes localizable. Epilepsy and other sequelæ of injuries and diseases of the brain are clearly discussed. The technic of intracranial operation is elucidated in a well illustrated and excellent descriptive chapter.

The "Surgery of the Neck," by E. Wyllis Andrews, covers the subject well. In the instance of malignant diseases he follows Crile in his insistence upon extensive radical excision with the preliminary clamping of the large vessels, and use of pneumatic suit.

Chapter XXXVIII. on Diseases of the "Thyroid" is by Albert Kocher, and brings out the results of the enormous experience in this work at the clinic in Berne, while the most recent experimental work with the thyroid and parathyroids is commented upon in its clinical bearing. This is one of the most valuable and instructive articles in the volume and carries a well-considered discussion of the indication and types of operations in Graves' disease.

Geo. E. Brewer has embodied the newest methods in his excellent presentation of "Surgery of the Larynx and Trachea and Thorax."

"Surgery of the Breast" is by J. M. T. Finney and is an eminently practical chapter, with the clearest and simplest pathological discussion, and a very definite stand on the proper operative measures, particularly in carcinoma. The position against plastic operations is particularly good. "But any incision designed only to permit a good closure, rather than the removal of a sufficiently wide area of skin is never to be contemplated." The description of the Halsted operation is excellent and the illustrations fair. A typographical error on page 584 makes cancer only 8% instead of 80% of all breast tumors.

In J. Chalmers Da Costa's article on "Surgery of the Tongue," those parts dealing with leukoplakia and cancer are particularly to be commended.

John C. Munro has the chapters on "Technic of Abdominal Surgery" and "Surgery of the Peritoneum and Retro-peritoneal Space." No better person could have been selected to cover this subject, which is now of foremost importance, and in the best form he gives the fruit of his vast experience in diagnosis and operative treatment.

W. J. & C. H. Mayo have the chapter on the "Liver, Gall Bladder and Biliary Ducts." We are familiar with their work about the various parts of the

biliary system and this collection of sections stands out as one of the best chapters in the work.

The "Pancreas and Spleen" are covered in separate chapters by B. G. H. Moynihan, this completing the surgery of the upper abdomen. This field could hardly have been treated better by any living surgeons, and standing as they do the exponents of the most advanced of modern surgery, their word is law, in so far as our science and art permits dictation. The volume is excellently illustrated, and another valuable feature is the complete bibliographies that accompany all of the articles.

Other chapters in the volume are "The Nose and Its Accessory Sinuses," by Harmon Smith; "Mouth, Teeth and Jaws," by Edmund Owen; "Esophagus," by Georg Gottstein.

THE DISEASES OF CHILDREN. A Work for the Practising Physician. Edited by Dr. M. Pfaundler, Professor of Children's Diseases, and Director of the Children's Clinic at the University of Munich; and Dr. A. Schlossmann, Professor of Children's Diseases and Director of the Children's Clinic at the Medical Academy in Dusseldorf. English Translation edited by Henry L. K. Shaw, M. D., Albany, N. Y., Clinical Professor of Diseases of Children, Albany Medical College; Physician-in-Charge, St. Margaret's House for Infants, Albany; and Linnaeus La Fetra, M. D., New York, N. Y., Instructor of Diseases of Children, Columbia University; Chief of Department of Diseases of Children, Vanderbilt Clinic. With an Introduction by L. Emmet Holt, M. D., New York, N. Y., Professor of Pediatrics, Columbia University. In four volumes. Illustrated in black and white and in colors by 61 full-page plates and 430 text cuts. Philadelphia and London: J. B. Lippincott Company. Sold by subscription. Price \$20.00 net per set.

This work is the most noteworthy addition to pediatric literature since the appearance of the second edition of Grancher and Cornby's encyclopedic *Traité des Maladies de L'Enfance*. And this work, which is really also a cyclopedic work of reference, is a worthy successor to the other great German cyclopedic of Diseases of Children, the "Handbuch" edited by Gerhardt. Pfaundler and Schlossman's work has been received with so much favor in Germany that the English-speaking profession may congratulate itself that the work has had so excellent a translation.

The work comprises four octavo volumes. Volume I deals with general subjects. After an introductory chapter on general pathogenesis and pathology, by Hamburger of Vienna, there comes a chapter which is unique in pediatric literature. This is a chapter on Symptomatology of Children's Diseases by Pfaundler. This semiotic summary is really a marvel of clearness of exposition, of presentation of detail, and of massing of information. The symptomatology is worked out under 206 separate headings, with elaborate indices and cross-references. In each division the symptom is described, directions for distinguishing it given, data concerning respective physiological conditions at different ages added. Predispositions whereby the symptom might be simulated, are also discussed.

While the author expressly (and wisely) states that the work is not supposed to afford an automatic index or "key" to the diagnosis in a given case, there can be no question of the value of this particular work with reference to the discussion of the various relations and significations of different symptoms. In many cases, elaborate tables have been prepared to facilitate the study of special symptoms, e. g., vomiting, albuminuria, etc. Other chapters in the general part concern themselves with discussions of general prophylaxis, therapeutics and mortality in infancy and childhood.

The rest of the first volume is taken up with the presentation of the problems of nutrition and metabolism in infancy and childhood. The articles by Camerer on metabolism and nutrition and on growth and weight during the first year, are particularly noteworthy for their careful and authoritative presentation of physiologic problems.

Volume II opens with an excellent article on the diseases of the newborn, by Knopfmacher. Of the general articles in this volume, the chapter on puberty and its physiology and pathology, by Professor Seitz of Munich, is especially noteworthy. The acute exanthemata are all considered in detail, the various illustrative plates being exceptionally good and very numerous. Schlossman's article on tuberculosis in infancy and childhood, is a most excellent presentation of present day authoritative opinion on this most important subject.

In Volume III, diseases of the gastrointestinal tract are discussed in detail.

Chapters of especial interest are those on the diseases of nutrition in infancy, and on gastrointestinal disorders in older children, by Fischl, of Prague, and on pyloric stenosis in infancy, by Pfaundler himself. The second half of this volume is taken up by the consideration of diseases of the respiratory and circulatory systems.

Volume IV is taken up (1) with the presentation of diseases of the uropoietic system; (2) with an exhaustive study of the diseases of the nervous system in childhood; and (3) with a description of the more important skin lesions in childhood.

A complete and carefully prepared index for the work is also included.

Detailed discussion of all these chapters is out of the question, but it is safe to say that the work of Pfaundler and Schlossman will at once take the place with the English-speaking profession which the original did in Germany, that of an authoritative work of reference on present day pediatric knowledge.

As a whole, this work is one that can be used with the greatest satisfaction as a work of reference by all physicians having to care for children. It is a pleasure to be able to refer to the almost uniformly good English of the translation. The book work is fully up to the standards of the publishers.

A HANDBOOK OF SUGGESTIVE THERAPEUTICS—APPLIED HYPNOTISM—PSYCHIC SCIENCE. By Henry S. Munro, M. D. C. V. Mosby Co., St. Louis, 1907.

A glance at the title of this book invites its own criticism. To the discerning reader and to the informed physician that would be all that is necessary to warn him from purchasing and certainly from reading this book. This book is the product of the professional hypnotist, a second cousin to the variety hall performer and the country fair experimenter. It is full of bad English, ill considered egotism and distorted facts. The only praiseworthy feature of the book is that it does not include within its pages a full length portrait of the professor in evening clothes in his favorite attitude of hypnotising a self-conscious, respectable but otherwise harmless physician. This would be about the only truthful thing in the book. For the sake of the momentary joy this picture might awaken in some of the discerning, it is to be regretted that the author has seen fit to omit it. The book reflects credit neither upon the publisher nor upon that portion of the medical profession which it is designed to reach.

A MANUAL OF ORTHOPEDIC SURGERY. By Augustus Thorndike, M. D., with 191 illustrations. P. Blakiston's Son & Co., Philadelphia.

This is a small book and is a very creditable attempt to present orthopedic surgery in a simple way to the student and practitioner. The errors of development in the skeleton and nervous system, the deformities due to weight-bearing, improper restraint from clothing, asymmetrical muscular development, as well as those dependent upon acquired diseases, are treated from an etiologic and chronologic point of view. There is a practical description of the technique of plaster-of-Paris bandages and the fitting of orthopedic appliances. The book is small enough to be carried in the pocket and is an excellent manual.

STATE BOARD QUESTIONS AND ANSWERS. By R. Max Goepf, M. D., Professor of Clinical Medicine at the Philadelphia Polyclinic. Octavo Volume of 684 pages. Philadelphia and London. W. B. Saunders Company. 1908. Cloth, \$4.00 net; Half Morocco, \$5.50 net.

This work is created for the purpose of aiding those who anticipate appearing before the various boards of examiners, such as state licensing boards, internship in hospitals, and the Army and Navy medical service. Dr. Goepf has collected a great quantity of questions propounded in the different examination rooms and appended appropriate answers. The book fulfills its mission admirably and will be of great assistance to those who desire to apply for appointment to positions through competitive examination.

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EDITORIAL.

IN RESPECT OF MEDICAL EDITORIALS.

Among the many striking inefficiencies of the editorial as it is weekly evidenced in our medical publications, sterility of thought, the absence of the power of logic, and "the choking sandy wilderness of wasted words," are insignia which, on account of age and placid acceptance by the medical public in a spirit of enviable toleration, are really so inherent in that form of writing that to exclaim against them on the ground of tenuity, puerility and inanity would no doubt be met by the rejoinder that the editorial, as an influence for good in awakening the combative and reasoning faculties, has never appealed to the thinking part of the medical profession in the light of the momentous. Now despite our conviction that the answer to a severe expression of a critical attitude, would be tinged with the philosophy which is innocent of theorems and has, for its best quality, many surface affectations, we feel that the times are ripe for the Unkind Critic to exercise the unwelcome function of stubborn and uncompromising opponent to "an intellectual vision something more acute than that of a Troglodyte," even though he display the ebullience of a vehement sensibility.

When we indicated that the fulgurant defects were tenuity and its congeners, we had in mind only those cursive attempts which have for their supreme object the obliteration of space, and not the purely medical article transformed by a peculiar necromancy into an editorial. This has but small weight with advocates of what should constitute an editorial, for the reason, that while a scientific paper makes good and profitable reading, its editorial reflection is so often a weakening of the writer's ideas, not to say a perversion, due to the editor's bias to and ignorance of its purport, that the unwary reader though moved at times to cry *io* after accomplishing the arduous task of finishing it, readily ascertains upon perusing the original article, that the time wasted over this special dissolvency of thought must be consigned to the insatiable maw of the storehouse for wasted energy. And as if this were not enough to brew

discontent, there lie harsh upon the page devoted to these productions, all sorts and conditions of foreign words and technical terms whose philological distortions are a menace to the composure of the reader of wide linguistic horizons.

Whenever a change is asked if not demanded to increase the happiness of even a small number of people, the query that occurs is—How is it to be effected? Though at first the means at hand may seem too mediocre—a prejudicial spirit that spells narrowness always excuses certain acts on the ground that mediocrity is invincible—there is no doubt that even with the talent that now manipulates the editorial sphere of thought, better things than are wont to crystallize into print, may be effected. A just abhorrence of foreign words, an abhorrence not to be fed forever but encouraged until such time as the editorial mentality can cope with the intricate situations, should be made a dictum; and as for medical terms, the less Latinity they possess, the greater their attractiveness. It is certainly a poor language—and who will say that English is not rich in treasures—that is so emasculated that when a certain synonym is required or the slightest word-shading demanded, recourse must be had to foreign fields. Dickens, in one of his books, describes a character who was always “burrowing in the graves of dead languages,” but were this master of fiction living to-day he would have no difficulty in describing not one but many characters of the sort, simply by studying those men of narrow outlook who prepare the editorials for our multifarious medical journals, in which in a sea of verbal nullity there swim, uneasily and ungracefully, the pitiably deformed words and expressions of the dead and living languages.

THE TRANSITION PERIOD IN EDUCATION.

Probably no subject commands wider attention to-day, nor activates keener minds than that of education. None, save the immediate concerns of his own art, has a higher claim to the interest of the physician.

While on the one hand we are apt to feel complacent over the diffusion of a knowledge of the three R's, we at the same time hear on all sides criticisms of present methods and their results. Most noteworthy is the fact that the most insistent and most trenchant expressions of dissatisfaction come from those themselves engaged in the work of education. We know of no other profession presenting a similar phenomenon. Physicians, it is true, may deplore their inability to cope with many of the ills which vex human kind, but it is with a comforting counter-current recollection of the almost yearly encroachment of science upon the unredeemed territory, and a resigned acceptance of the truth that certain strongholds of the Destroyer must from their very nature to

the last remain unconquered. Jurists may admit the existence of unwise statutes, and the fallibility of human justice, but will probably claim that the results obtained as a whole do not fall far short of the best which the inherent imperfections of human nature will allow. So in other professions, the consensus, if not one of satisfaction, at least does not amount to such dissatisfaction as seeks frequent vent in speech. Teachers, however, when discussing educational matters among themselves, are constantly heard to deplore the disappointing results of present methods, whereas in the presence of non-professionals their attitude is instinctively one of self-defense.

The existence of this phenomenon is not wholly discreditable either to the science of pedagogy or to its exponents. It is in fact largely the product of the latter's intelligence and conscientiousness, and will be as a rule observed to vary directly as their share of these qualities. It is in part an expression of the virtue of humility, and bears out the truth of the lines,

"The fiend that man harries
"Is Love of the Best."

But it also rests in part on a recognition of faults which cry aloud for correction. These very faults are largely the offspring of attempts at betterment. Older methods were seen to be inelastic, to cramp and gall the developing intellect at certain points, and at times to tend rather to suppress than to develop talent, permitting accretion only in predetermined directions, like the Chinese pots, in which children are confined to grow into grotesque shapes.

The system was rigid and inelastic. It was but natural that the pendulum, once liberated, should swing to the opposite extreme, and now we have primary school instruction in clay-modelling and the use of water-colors, while the secondary grades offer elective courses intended to encourage individuality but often permitting a scattering of forces incompatible with attainment. Some of the new ideas are experiments, and in some of the experiments failure is already discernible. The truth is that the time has hardly arrived either to praise or to blame, for our entire educational system, primary and secondary, is now passing through a transition period. It may nevertheless be allowable for those outside the profession of pedagogy, but deeply interested in its results, to point out where, as they see it, these results fall short of what the public which supports the schools has a right to expect.

Among such shortcomings is the fact that our children as a rule are not as far advanced in their studies as European pupils of corresponding age. We are loath to believe that their brains are inferior, although in a judicial inquiry we should keep our minds open to this possibility.

We should also remember that in many parts of this country climatic conditions impose a serious curtailing of the school-year. There are those who believe, with good show of reason, that the wide incidence of malaria is an important factor. But when all is said, it is difficult to escape the conclusion that somehow or somewhere our system is at fault.

Is it perhaps in the sacrifice of essentials to non-essentials? The notions of music and drawing acquired at school are doubtless of benefit, and modern attempts at "nature-study" can only result in good. But why devote time to foreign languages (never to be mastered), higher mathematics and a smattering of the ologies, when the pupils on being graduated can with rare exceptions neither write nor speak English, and often cannot do a single useful thing acceptably?

Athletics are excellent, but is it not true that foot-ball, base-ball, rowing and "track-work" become with many of our college youths an end instead of a means? Diversion is necessary, and a certain amount of youthful folly natural, but there is reason to fear that the unrestrained silliness of Greek-letter fraternities is engendering in some quarters darker and more dangerous characters in the way of intemperance and immorality.

But it is not only in the colleges that the morals of our youth need watching. In the primary and secondary grades, especially in the private schools patronized by the well-to-do, there often exists a spirit of insubordination and disrespect of properly constituted authority calling for the application of the birch-rod of a former generation, in the absence of which the evil learned by the boy or girl at school will, we fear, often outweigh the good.

Let us hope that these are but incidents of a period of transition, and for the sake of the elect, pray that its days may be shortened. The interest of the physician in these matters is second to that of none, not only because he forms an integral part of the community, often with children of his own, and often himself a teacher, but because he is more constantly confronted by, and better than others realizes the sad effects, immediate and remote, of an education physically, mentally or morally defective.

THE FLIGHT OF ST. LOUIS.

In his arraignment of St. Louis, under the above title, Jacob A. Riis in a recent number of *Charities*, makes a series of trenchant remarks about our slums which should cause the beneficent effects of a good jolt to those heavy-lidded citizens, whose conservatism in addition to eyes that are never more than half open, blinds them to glaring defects in our civic morale.

That we are at a most unenviable standstill as regards progress on lines which should bespeak our earnest endeavor, can be accounted for by what Carlyle calls "torpid unveracity of heart;" for though intellectual dimness may have a bearing, the material confusion which rides triumphant the crest of all our reform waves, undoubtedly receives its nourishment from those wells of untruth which are continually fed by the optimistic spirit of the misguided advocates of unveracity. Were we to bring an accusation of intentional untruth against them, they would no doubt express surprise, if not indignation; but though their indignation could be excused on the ground that in their slothful state their untruths were guileless because not backed by intellectual fervor, their surprise would be condemnatory enough to ostracise them from all domains in which living men and women have the right to sojourn. For, surely, he must be a poor substitute for that living entity of observation and enterprise which we expect a man to be to-day, to continue happy in his state with no thought of the disease-laden and poverty-stricken areas outside his immediate environment.

The tenement house question is not a new one in the city of St. Louis; in fact it has been with us so long that even its earliest and best enthusiasts, men who did not suffer from "a bounding swell of poetic fancy" but knew the stern realities of life, are grown a bit callous in its service. This is not at all surprising for if ever a step in the right direction was obstructed by undesirable obstacles, it has been that fledgling in civic progress—the proper tenement house. So obtuse are those who should lend it support, so purblind, so selfish, that one would think that in asking for the material uplift of the poor, who are now the packed occupants of grimy and tumble-down dwellings, one was asking for the Roc's egg! And as if the problem were not large enough to engage our concentrated thought for many days to come, Mr. Riis points out other evils, which are so many cesspools in the cherished picture of human happiness prized by our fellow-citizens. What these evils are the following truthful word-painting, descriptive of barbaric insanitation, from the Civic League's housing committee's report, will show: "The most immediately deadly thing connected with the home industries in St. Louis is the dirt that is poured, baked and frozen into the food-

stuffs manufactured in the dwelling houses. It is difficult to imagine the dirt in which the wholesale and retail milk, butter and ice cream businesses are carried on. The milk is kept in damp cellars, the floors muddy from spilled milk and the water dripping from the iceboxes. These boxes are never aired—seldom drained, and are unbelievably unclean. Milk can be bought, late in the day, sometimes at three cents a quart. This does not sour either,—in the regular way—by next morning. It seems somehow to rot, if that is possible. The bakeries in the cellars and alley houses are beyond description."

In the light of what has not been done, despite considerable agitation, we feel justified in experiencing no immediate worry lest the delightful triumvirate, Poverty, Disease and Crime, will feel so uncomfortable in our welter of vehement sanitary activity, as to wing their way elsewhere. To effect so desirable an end, the force of each citizen must be had to combat those misfortunes which arise from communal inertness. Extraordinary outbreaks for a cause, when abetted only by a handful of citizens, soon spend their force, not only on account of the fewness of the Hopeful, but on account of the disintegration of enthusiasm from the dampening effects of the unjust criticisms of the Apathetic. And speaking of the latter, who will deny that St. Louis can marshall quite an army of the ilk. Indeed, so great has been the obsession of insensibility and indifference, that the only parallel case that comes to our mind, is that of St. Bernard who, according to Morison in his "Life" of the saint, could ride for a whole day along the shore of the Lake of Geneva, and yet when in the evening his comrades spoke some word about the lake, would inquire: "What lake?"

A HUMBLE REMONSTRANCE.

In an address of the French Senate to the first Bonaparte the following pertinent words were used: "Sire, the desire for perfection is one of the worst maladies that can afflict the human mind." Now although this aphorism contains enough grains of truth to warn the majority of mankind from attempting to acquire what in most cases must spell defeat, with bitterness in its train, the unattainability of the will-o'-the-wisp, perfection, has yet another undesirable attribute, in that it has the power of metamorphosing the mildest sort of critic into the sort of vast demands, who displays a deal of irascibility because works of a very high order are not flawless enough "to whisk the stars out of their spheres." Of course to look for perfection in an article in a medical journal is putting a very high stamp on that kind of work, and far be from us to exact from a writer of the ephemeral in medical literature the finish, the merit, the erudition which are characteristic

durable performances. But when the paper in question falls so far short of even the mediocre, a certain amount of irritability may be pardoned us, especially when the name of the author is a lure to its earnest perusal.

We have often inveighed against the historical article, as it is dressed and furbished in our medical journals, and though the multiplicity of such outpourings have made inroads into our good nature, the upset was always caused, not by a desire for perfection in others but rather by the repetitious monotony of the onslaught. In our readings of articles of the historical brand, we have come across some deserving of praise, but also not a few whose birth into the realms of medical journalism can only be accounted for by the fortuitous occurrence attaching to the glamor of a name. And after reading Dr. Howard Kelly's paper entitled "The Barred Road to Anatomy," in the *Bulletin of the Johns Hopkins Hospital** for July, we are doubly sure of what we said before, that the wrenching awry of our complacency, whilst in the toils of the historical article, is not due at all to disappointment on account of an absence of perfection, but to a vacuity which always results when an already exiguous rill of knowledge is made to bare its many weaknesses on account of repetition.

We have met them many times before, those familiar figures of Burke and Hare. We have known for some time the meaning of the verb "to burke;" and have grown restive under its ineluctable insistence in all articles on "Resurrection Days." The evil doings of the culprits, their machinations to procure bodies, the interest of great surgeons in the ghoulish undertakings, have done yeoman's service for years, as pegs, on which writers of varying degrees have hung the residua of their many readings in this special field of historical research. But such is the imperishable ductility of the subject that no matter how ragged it is, even a mere compendium of bald facts, unadorned by the slightest literary grace, passes muster before a learned historical society.

To deal in vaticinations is taking to oneself too much honor; therefore there is no desire on our part to pose as prophets. But this we do believe—and our belief is not founded on niggling precision—that the tenure of historical societies will be considerably shortened by encouraging stultifications of hackneyed themes. Only in case the writer puts on "Jonson's learned sock" whilst composing his paper, and exercises some literary workmanship, will a tolerant spirit prevail among those doctors who must have medical history as a solatium after their working hours.

mo^l at the meeting of the Johns Hopkins Historical Society, October 14, 1907.
St. Lou

"IS NOT BOILED WATER ALWAYS PERFECTLY SAFE TO
DRINK?"

In answer to this query the following hygienic suggestion was made to several hundred thousands of readers (according to the statements of the editor) in the *Ladies' Home Journal* for June:

No; boiled water is unsafe to drink, according to a French scientist who last year tested the qualities of such water. He declares that while most germs are killed in a few minutes by boiling the water, some can be killed only by a higher temperature. Boiled water is not regarded as safe for use in surgery because the surgeon cannot feel sure that it is really sterilized. The only water which answers all hygienic demands is that which has been sterilized by heat under pressure. Ordinary boiled water is liable to cause numerous severe and often dangerous stomach and intestinal maladies.

The problem of the relation of water to the health of the human race is not solved by the knowledge that H_2O in a certain quantity, is absolutely necessary to human life; in fact the experiences both in ancient and modern times, that have proved that water used as a necessity of life has been the cause of serious disturbances and ailments in the human organism as well as the initial source of many epidemics of fatal diseases, have but greatly complicated this problem. This experience has led to exhaustive, although not conclusive, studies and investigations into the nature of drinkable water. Referring to the literature on this subject we find that efforts to establish a standard for drinkable water have meant an immense amount of work done in this direction, but the impression we gather is that the labor has to a great degree been a wasted endeavor because based on false conceptions. The labor has, however, enabled us to guard against danger under certain although rare conditions; but, it has not shown as a positive conclusion that for the necessity of an established standard of water certain conditions must be fulfilled; and, moreover, the general experience proves that these conditions are not necessary. What qualities or contents a water must have is a problem as yet by no means solved; and the question whether a difference in the degree of the quantitative and qualitative characteristics of a water, irrespective of artificial contamination, have weight in influencing the health of human beings, is not proved, and it is very unlikely to be proved by the daily observations that everybody has opportunity to make. This does not in any sense mean that the laborious and meritorious work which is being done in this line has no value for hygiene and the general improvement of the conditions of life; on the contrary, it has been a stimulus of great weight in this direction. The pains taken to provide a healthful water have certainly had their compensation for they have been instrumental in improving our welfare, if only indirectly.

We say indirectly because the object has not been so much the improvement of the water supply itself, but the best means as to how to dispose of sewage and all other offal. The so-called improvement of water is in most instances only an appeal to our esthetic sense, since we desire to have before us a water clear, colorless and palatable. The methods to obtain this desired end vary, but practically all of them have the same result: such water is more inviting than the sort that by its aspect, taste or smell, appears objectionable. The hygienic purport is not so much the relative proportions of the mineral, animal and gaseous substances, as the relative quantity of substances derived from the admixture of the products of decomposition of organic matter. That in many parts of the country water containing these substances is used without any detriment to health, is well known; also that by necessity or custom, the esthetic objection is not a tenable one, and, what is more important, the ingredients do no harm. But the one question of high import to the health of the community is, the possibility that these substances are the result of a decomposition of material derived from excretions of diseased individuals,—individuals infected with pathogenic bacteria.

As is well known, the number of pathogenic bacteria that can be transmitted by water used in our daily life, is very small. Practically we have to deal only with the bacillus of typhoid, the vibrio of Asiatic cholera, and, perhaps, with the bacillus of dysentery. The admixture of material containing these pathogenic bacteria, like the feces of typhoid or cholera patients, will of course render a water infectious, at least so soon as sufficient infectious material is present. The danger of this possibility is, as a rule, very slight. The parasitic bacteria concerned in this question usually have little resistance to the natural vital force of the non-pathogenic bacteria present in all waters, and are soon eliminated by the fight for existence. An infection by such a water is only possible when the introduction of pathogenic bacteria is sudden and copious, when the water, into which they are carried, is itself so active that it contains few other bacteria and so leaves the pathogenic bacteria free to live undisturbed. Another danger lies in the distance between the locus of contamination and the locus of utilization of such water, since its bactericidal qualities are seen only after a prolonged period. Such water must cause infection, if in the quantity of water taken by an individual the necessary number of pathogenic bacteria is present. Again, when used for drinking or other purposes, it would necessarily cause a disseminated and multiple infection, as the susceptibility to infection, by the diseases possible through this medium, is almost universal. The infection with typhoid bacilli, for instance, if taking place through water consumed by drinking, would in every instance give rise to the sudden

appearance of an epidemic of typhoid. The same obtains for cholera asiatica. For the latter the epidemic in Hamburg some years ago is a good instance; for typhoid, the recent epidemic in Ithaca, N. Y. These experiences are the unavoidable expression of the effect of contamination or infection by pathogenic bacteria of drinkable water. If typhoid, or cholera, or other infectious diseases, were mostly due to this mode of infection, the human race would be decimated and our own St. Louis would not have at the present time an increase of its inhabitants. The fact is that in St. Louis it cannot be proved that a single case of typhoid fever has been caused by the water supply. Typhoid in St. Louis is entirely endemic, due to direct or indirect transmission from one patient to the other, or to importation from the outside. The same obtains in all other large cities where the improvement of the typhoid morbidity was attributed to the improvement of the water supply. It was, in fact, always only secondary and due simultaneously to improved disposal of sewage and the greater care in preventing typhoid excretions from entering the sewage or the water. The control of the water means only the prevention of the possibility of the occurrence of an epidemic, and of course must be kept up constantly by chemical and bacteriologic tests. Although none of the latter is definitely conclusive as to the presence of danger, they certainly indicate the time when precautionary measures are demanded. Of course in only rare cases, so far, has the presence of typhoid bacilli in the water been demonstrated; still, from experience, a suspicion is often justified; this, however, can be verified only by waiting for about a fortnight to find whether an increase of the typhoid rate takes place. As has already been stated, a simple increase in moderate numbers does not mean water infection; the latter always shows itself by a fulminating epidemic. Nevertheless, the boiling of water during the periods when suspicious conditions obtain, is an immensely important matter. Simply bringing a mass of water to the boiling point will always make that water sterile as to pathogenic bacteria, for they are killed in a few minutes at a temperature much lower than the boiling point. That water, after being brought to boiling, is not absolutely sterile, has no bearing on this point, as the bacteria or spores remaining alive are not pathogenic, except perhaps tubercle bacilli and spores of the tetanus bacillus, but these, even if they should be present, are not likely to cause much harm. For aseptic procedures the principle of complete sterilization has been established, although rarely is such a procedure possible in its entirety.

To object to the boiling of water on the ground that it is not absolutely sterile and, besides, causes pathologic disturbances in the consumer, is a serious mistake, and its world-wide publication can only do

harm. A water boiled is always free from infectivity for typhoid, dysentery and cholera. Epidemics have been curtailed by boiling the infected water. In epidemics and in periods where the possibility of an epidemic is given, the only protection is to boil the water used in the community. Whether in times of no danger boiling is to be resorted to or not, depends entirely upon the taste and bias of the individual. There is to-day, with our system of water control, no need for it. Nor is there hardly any use to boil water that is used for nursing infants. The number of bacteria present in everything we touch and eat is so immense that the rather small number present in water does not increase the quantity very much. The character of these bacteria in both cases is harmless, if not directly beneficial.

On the other hand, there is no objection to boiling the water, and the disturbances alleged by the author referred to, do not follow its use. In suspicious times boiling is the thing to do and no absolute sterilization is needed. To abrogate boiling of water as a means of protection and to ask for vigorous sterilization, makes this protection inaccessible to the community and deprives it of the best means to avoid infection.

OPINION AND CRITICISM.

DR. CABOT AND CHRISTIAN SCIENCE.

In a calm survey of that extraordinary chaos of abortive thoughts, known to the world as "Christian Science," Dr. Richard C. Cabot in *McClure's* for August, gives considerable illuminating information on the vast difference between functional and organic disease. We take it that the majority of doctors to-day know the distinguishing marks, when brought face to face with both forms, and how often a patient who insists upon traversing without pause the circle of illusions and pains, could really be benefited by something approaching mental healing. But, on the other hand, what patient, beset with a functional disturbance, is convinced by plain-speaking and the ballast of all moral philosophy, reason, that her ailment is not of a gravity that should be met by innumerable medicines in the doctor's armamentarium, or even by the glittering knife—things which have dangled so long before the public eye that a doctor's mission is not highly thought of unless they are brought into play. Now neither the doctor nor the patient is really to blame for this peculiar situation in what we are pleased to call human progress. Being only a man of medical affairs, in the patient's opinion—a man who is symbolized as a something whose science has placed a bottle in one hand and a bistoury in the other—his attempt at suggestive therapeutics is combated at every point, not only by an unbelieving scowl, but by a mental attitude which scorns the chronicling of small medical beer, no matter how kindly brewed, in place of something or other that has the large tangibility the public mind invariably associates with the practice of medicine. Thus we see a tentative effort at mental healing throttled by unbelief!

We do not say the patient is altogether to blame, for a performance which must strike the keen observer at once as an instance of mental jejunity. Her environment has been all wrong; her conversational diversions, and the impressions gathered from those who have been hosts to tumors or cancers, have left too deep an impress on her ever-receptive mind. And who will contend that the conversation of to-day has any other pivot around which the maddening whirl of small talk revolves, than the easily constructed one of "the latest surgical operation."

Mr. G. K. Chesterton in writing of Elizabeth Barrett, later Mrs. Browning, says: "She was surrounded by that most poisonous and de-

grading of all atmospheres—a medical atmosphere,” and though the sort of atmosphere indicated by the English critic is bad enough in the sick-room, “in the first floor front,” where to-day it seems to have its abiding place, it is instrumental in causing incalculable harm, for it creates nothing but protervities and crotchets in many women’s minds. Therefore, how are brains unaccustomed to the calm of stoicism—brains only too readily addled by the foam and froth of the perverse—to differentiate between functional and organic disease?

THE OMNIPRESENT SEXUAL QUESTION.

In spite of the formidable array of books and papers and medical sermons on the vital subject of publicity of the sexual question, with a view to the enlightenment of all classes, which have inundated us of late, we must realize that the sincerity and sobriety in our advocacy of new and important means to stem the tide of sexual gratification so as to lessen the potential eventualities which may ensue, has as yet been to small purpose. And this can be accounted for in many ways, principally because without oneness of thought affixed to any movement, confusional ideation obfuscates its simplicity and directness. That men of light and leading, men in our profession who have the moral and physical welfare of communities at heart, are not Laodiceans in the high endeavor to warn and advise, is proved by the more or less scientific manifestations in our various journals. But though talent is not wanting in the effective presentation of their pleas, chimeras, which should be foreign to a matter wholly mundane, are only too often present. If we mistake not, it was Carlyle who said, in speaking of a much agitated subject, “the talent is not the chief question here: the idea—that is the chief question,” and the truth of his lines comes home to us every time we read “another opinion on the sexual publicity subject” as advocated by a new luminary in the ranks of fervent votaries. For how can great good come out of a warring mass of argumentative flotsam and jetsam, no matter how talented the gloss, when the one idea which should be primal, is submerged?

Now to further the idea of the proper dissemination of knowledge on this subject, it is not necessary to cry aloud for transcendent purity, as those who are unacquainted with the behests of Nature would desire, or imagine, as Swift did, that nearly every man “combines in himself all the diseases and vices transmitted by ten generations of rakes and rascals.” Fortunately for us there is a middle road which should be frequented by those delvers into the problem who desire some recognition from the world at large for clarity of vision and a sanity unalloyed by foolish prejudices. There, our moral reformers would see that men are

not like Thoreau who "ate no flesh, drank no wine, never knew the use of tobacco; had no temptations to fight against, no appetites, no passions," but the victims of a false education which is not so much the result of separateness of their doctors' knowledge of diseases from their early training, as the foolish and accepted idea which, especially, obtains in this country that boys have the right to choose their companions from the walk of life which appeals to them. In this respect Otto Ernst, the well-known German writer, makes some apposite remarks in an article "Von der Sexuellen Aufklärung" (As to Sexual Enlightenment) in a recent number of the Vienna *Neue Freie Presse*. "In my opinion," says Ernst, "what is more important than sexual instruction is the duty which should devolve on all parents to see that their children associate only with those persons whose mentality is of a high order—pure, noble and exalted. If my mind was detached from all thought of sexual matters, even after I had passed my callow days, it was because of association with men and women of this caliber, and my earnest attention to scientific and literary subjects."

LITERARY NOTES.

In the fifth volume of that highly interesting series, "Les Indiscrétions de l'Histoire," by Dr. Cabanès (Librairie Mondiale, Paris), there is an unusual chapter devoted to a medico-historic study of the death of Molière. This posthumous account, which the author happily entitles "The Revenge of Diafoirus"—Diafoirus, by the way, is the doctor in *Le Malade imaginaire* (The Hypochondriac), whose ridiculously pedantic son sues in vain for the hand of Angélique, the hypochondriac's daughter,—is as minutely documentary as any student of history would wish. Now although Molière made sport of the medical profession by describing Sganarelle in "Le Médecin Malgré Lui" (The Physician in Spite of Himself), Dr. Purgon and the Diafoiruses, father and son, in "Le Malade imaginaire," Dr. Cabanès asserts it is a mistake to accuse the dramatist of medicophobia; and to prove his point he mentions that among his friends Molière counted Gabriel Naudé and Bernier, two disciples of Gassendi, and Nicolas Liénard, dean of the Faculty. There is also the possibility of a friendship with Gui Patin, and it is not improbable that for Scene V. in Act II. of "The Hypochondriac," in which Diafoirus, the elder, describes his son's progress at the medical school in the following language: "Finally, by dint of keeping at it, he obtained his degrees with distinction; and I may say, without vanity, that, during the years that have succeeded, no graduate has made more stir than he has in all the disputations at our college. He has rendered himself formidable, and, whatever thesis he propounded, he argues to the

bitter end on the opposite side. He is resolute in debate, as rigid as a Turk in his principles, never changes his opinion and pursues an argument to the last retreats of logic. But, above all else, what pleases me in him is that, following my example, he attaches himself blindly to the opinions of the ancients, and that he has never desired to listen to or understand the reasonings and experiments of the pretended discoveries of our century, concerning the circulation of the blood and other opinions of like nature," Molière was coached by a former dean of the Faculty, Jean Meauvillain.

Again, to attribute as a number of critics have done, Molière's attacks on the science of medicine, as it obtained at his time, to a quarrel with a doctor whose lodger he was, or to a misunderstanding on the part of his wife, Armande Béjart, with the wife of a certain doctor, is not only puerile but ridiculous, for it places the dramatist in the unfavorable light of deriving the inspiration for his best comedies from a source as despicable as quarrels among servants. Moreover in Act III., Scene III. of "The Hypochondriac," in a conversation between Argan and his brother Béralde, the dramatist unequivocally shows that his bias was against physic and not against doctors, for he puts into the mouth of Béralde the following pertinent words, apropos of the romance of the former: "But, when you come to learn the truths of things by experience, you find there is nothing in it all, it is like those beautiful dreams which, when you wake, leave you nothing but the regret of having put faith in them." And despite the wonderful progress of medical science, is it not possible to reproduce to-day criticisms similar to those of the great writer of comedies of the eighteenth century? To quote Béralde again, "it is not doctors he (Molière) makes fun of, but the absurdity of physic."

As to Molière's death, a detailed account was published in the *Union médicale* in 1848. According to the author, Dr. Fauconneau-Dufresne, from early youth the dramatist's health had been delicate and he had been subject to attacks of congestive asthma complicated with hemoptysis. His life should have been calm and regular, but fate ordained otherwise, for at the age of forty-two he espoused Armande Béjart, an actress in his company, whose rather youthful age—she was but eighteen—and whose coquetry, not to mention an extraordinary amount of frivolity, so badly accorded with his gravity, that there was some justification for his jealousy. On account of worry his strength was soon drained; added to which his cough became so aggravated that it interfered with his appearing on the stage. At intervals acute attacks of asthma confined him to his bed, especially in 1665, and again in 1667. On Friday, February 17, during the fourth representation of "The

Hypochondriac," in which he played the rôle of Argan, the imaginary invalid, he was seized with an attack of suffocation which, however, did not prevent his finishing the play. The performance over, a harassing cough set in accompanied by expectoration of blood, and this was soon followed by a hemoptysis which resulted in death.

In contradistinction to Dr. Fauconneau-Dufresne's version of the causes which led up to Molière's death, Witkowski is certain that he was phthisical, and that when he died he was in the last stage of pulmonary tuberculosis. This was also the opinion of Germain Sée, who found that the hypothesis advanced by Maurice Raynaud and later by Follet, of Lille, that the disease was an affection of the heart or aneurysm of the aorta, was "devoid of all probability." Dr. Cabanès explains the error into which these investigators fell by asserting that the final excessive hemoptysis was undoubtedly caused by a rupture of an artery in a tuberculous cavity (Rasmussen's aneurysm).

Dr. G. Debombourg in his Lyons Thesis, 1907, "On the Ophthalmotuberculin Reaction as a Medicine for Man" (*De l'ophtalmo-réaction à la tuberculine en médecine humaine*), says that it is far from being, as was at first supposed, an infallible and inoffensive means of diagnosis. That it is an easy way of making a diagnosis he admits, but adds that we should not forget that its semiotic value is not always absolute, since it obtains in other infections besides tuberculosis—in syphilis and typhoid fever. Experience has already taught many of us that the reaction is quite inconstant, cases of undoubted tuberculosis showing no disturbance; hence after its use we are not in a position to say, with any surety, which are tuberculous and which not. This being the case it can readily be seen that the ophthalmic reaction is inferior to the sero-reaction which is, beyond a doubt, less offensive, more constant, and has the advantage of showing a number of gradations. Moreover, the ophthalmic reaction may be followed by certain local complications capable of causing irremediable alterations in the vision. Thus Dr. Debombourg has seen cases in which follicular conjunctivitis, phlyctenular keratitis and episcleritis have resulted from the application.

ORIGINAL ARTICLES.

SUPERIOR ALTERNATE HEMIPLEGIA.—GUBLER-WEBER TYPE.

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Unusual types of hemiplegia are of sufficient interest to report, if only in brief. Even when not coming to autopsy, such reports may be of service, both as affording opportunities for anatomic-clinical differentiation, and as offering an occasion for the recording of features which, while not new, are sufficiently unusual to claim attention.

It is for this reason, and as giving a record for future reference, should one case here noted come to autopsy at some future date, that the following histories of cases exhibiting the Gubler-Weber syndrome are given.

But few communications on this syndrome have appeared in English, since the study of Weber himself in 1863 (*Med. Chir. Transactions* 1863) (American literature seems to be barren of even case reports), and it is usually held that this author was the first to discuss this particular form of crossed hemiplegia; but such is not the case. Gubler, in his "*Memoir sur les paralyses alternes en générale et particulièrement sur l'hémiplégie alterne avec lésion de la protubérance annulaire*," which was published in 1859 (*Gazette hebdomadaire*) following three years after his first contribution to the more general subject of paralysis, due to lesions below the crossing of the seventh nerve (Gubler-Millard syndrome), calls attention to the fact that Luton had previously described the condition of a paralysis of the oculomotor of the left side with a total right hemiplegia, and had localized the lesion in the left cerebral peduncle. This, perhaps the earliest case recorded, is worthy of reproduction, since Weber had entirely overlooked Gubler's study, and few writers since have called attention to it, save d'Astros (*Révue de Méd.* 14, 1894). The earliest text-book recognition by Gendrin and the monograph by Koechlin should not be overlooked.

History of Luton's Case. Auguste D., musician, entered the Salpetrière, April, 1858. Service M. Briquet.

A first attack of paralysis had occurred six months previously, involving the left side of the body. This paralysis disappeared almost entirely, and the patient was able to take up his occupation. On arising

on the morning of April 10, 1858, he was suddenly taken with a second attack. This came on without loss of consciousness, there being a general, but not complete paralysis on the left side of the body. Motility is chiefly involved, the sensibility being somewhat reduced when compared with the opposite side. There was slight deviation of the lips; the protruded tongue is directed to the left in an evident manner, but may be moved in all directions. The left nostril is slightly dilated. The left eye is wide open, and cannot be closed. The pupil is mobile, vision clear. The right eye is completely closed and cannot be opened: the right pupil is widely dilated, immobile. The eyeball cannot be raised up nor down, no inward movement, but it moves freely outward. The alternating movements of rotation, following the antero posterior axis are doubtful. The vision in this side is obscure. He sees objects vaguely, but without precision. When the patient looks with both eyes, he sees double.

The condition remained stationary for some time. Towards the end of September the patient presented an access of temperature, which was intermittent, following catheterization, and died in coma, five months after his admission.

Autopsy. This showed an atrophy of the right third nerve, at its egress in the interpeduncular space, it being diminished in diameter to about one-half of that of the oculomotor of the other side. The right peduncle, seen from the outside, seemed flattened, patulous, and less rounded than that of the opposite side. Its softening and fluctuation was in contrast with the firm consistence of that of the opposite side. Sections of the right peduncle and neighboring regions showed that the entire substance was reduced to a non-homogeneous boil of a grayish whiteness at certain points, and of a *café au lait* color in others, and of a blackish tint in the part corresponding to the *locus niger*; that this focus of softening is definitely limited, that it occupies the depth and width of the peduncle, and extends upwards to the neighboring region of the optic thalamus.

In the right cerebral hemisphere two other areas of softening were present: one at the extremity of the sphenoidal lobe, the other at the summit of the occipital lobe. These areas have the size of a nutlet. They are well walled off, and their limits are not diffuse. There was about 60 grams of clear limpid liquid in the ventricle. There was a slight spreading of blood into the lateral ventricles and the arteries at the base were atheromatous.

There were chronic inflammations in the urinary organs, small abscesses in the two kidneys; two areas of gangrene of the right lung, and a gangrenous and purulent area in the right lung. A passive dilatation of the heart. Luton ascribed death to the secondary infection.

Since this case of Luton's, there have been a number of others reported, an extended analysis of which has been given by d'Astros (*Rév. de Méd.* 14, 1894).

Believing that the Gubler-Weber syndrome is seen rarely, the three case histories to be reported seem worthy of record, as they present certain features concerning which little is known.

The first case that I wish to report is that of Albert Drecker, a laborer, 44 years of age, single. He was admitted to the neurological ward, City Hospital, April 19, 1908. On his admittance the patient was in deep coma, irresponsive, and had come from Bellevue Hospital in that

condition, evidently suffering from an apoplectic stroke as his left side was completely inert. He lay in this condition for about three weeks, being unapproachable, comatose and almost dying, pulse 60, respiration 16 for much of the time, at times the pulse was as low as 50.

Even in this condition, there were marked evidences of a complete left sided hemiplegia, with ptosis of the right eyelid, and dilated right pupil, and external squint of the right eye.

In the first week in May the patient came partially out of his coma for four or five days, was unintelligible, very confabulatory, and fabricating, rambling and incoherent. He then seemed to have another access of bleeding, and went into deep coma, with rapid irregular and feeble heart action, from which, however, by the 20th of May he had made a partial recovery.

From this time on, his mental state began to clear, although at the present time of writing, May 27, 1908, it is not sufficiently clear to warrant the acceptance of all his statements.

He is single, denies leucic infection, but admits to being a heavy drinker. He remembers almost nothing concerning the incidents antecedent to his attack, and very little trustworthy history is obtainable.

His physical examination at the present time shows:

CRANIAL NERVES: *First nerve.* There is no impairment of smell, he recognizes aromatic odors.

Second nerve. Sight is somewhat impaired on the right side, unimpaired on the left. There is no diplopia, and no hemianopsia. The blurring on the right side is largely due to paralysis of accommodation.

Third nerve. This shows marked involvement on the right side; right ptosis. The only fixed position of the right eye is upward and outward, and the movements are limited, the external rectus and the superior oblique apparently being the only muscles spared. Marked dilatation of the right pupil, with diminution of reaction to light on the right side is present. The ocular movements of the left side are normal. The left pupil reacts to light and accommodation, and shows some consensual light reflex; Wernicke's hemiopic pupillary phenomenon not elicitable.

Fourth nerve. Apparently uninvolved on either side.

Fifth nerve. No sensory disturbance in the fifth nerve distribution on either side.

Sixth nerve. No anomalies in the sixth nerve. Patient's mental state prevents accurate tests for diplopia.

Seventh nerve. There are slight traces of a facial palsy on the left side. For the first three weeks, during which the patient was unconscious, he kept his left eye open most of the time, and winking did not seem to be spontaneous. At the present time, however, there seems to be no orbicularis paretic, and the lower branches of the seventh are not markedly involved. The mouth was drawn a little to the right, and there was partial obliteration of the left nasolabial fold, but at the present time there are only slight residuals of left facial involvement.

Eighth nerve. No deafness and no hallucinations.

Ninth nerve. No involvements.

Tenth nerve. The heart action is regular; there is no marked disturbance of breathing at the present time. During the second attack the patient had a very weak, feeble and irregular heart action, and the general impression given was that of cardiac disturbance.

Eleventh nerve. No involvement.

Twelfth nerve. Tongue—left side is a little softer than the right.

Fibrillary tremors are marked. The tongue protrudes very slightly to the left, but is easily movable in all directions.

SPINAL NERVES. Marked paralysis of the left arm; it is flaccid, swollen and œdematous, and there is a complete loss of all reflexes. No marked sensory disturbances are obtained, although in this respect the patient's mental state does not admit of an exhaustive analysis. The left leg is less markedly involved than the left arm. The patient is able to flex the thigh and leg, but the movements of extension are very weak. There is distinct atrophy and loss of knee jerk of the left side. There is no Babinski. Slight false clonus. The muscles of the right side are not involved. Knee jerk, wrist jerk, elbow jerk all present on the right side. No clonus, no Babinski, no Oppenheim. No sensory anomalies.

This case then presents a clear cut case of the superior alternate paralysis so well described by both Gubler and Weber. It is now an interesting feature that the patient still shows marked somnolence, and there is absence of any hypertonic phenomena on the paralyzed side, four weeks after the original injury.

Case 2. John Lindsay, age 29, born in the United States, single. The patient was admitted into ward five of the City Hospital on December 7, 1905, first entering Dr. Quimby's ward, and later that of Dr. Collins, through the courtesy of both of whom, I was permitted to see the case in the first instance.

The patient was a laborer, markedly alcoholic. He had suffered from gonorrhea several times, and had had syphilis three years previously.

In the immediate history, the patient complains of recent headaches. There was absence of rheumatism, malaria and typhoid. In childhood he suffered from measles, chickenpox, whooping cough and scarlet fever. Has not heard well in the right ear since he had scarlet fever. The patient, however, gave a history of having fallen a distance of twelve feet six months prior to the onset of his present illness. A week or ten days before his admission to Bellevue Hospital he fell a distance of about three feet, landing on his left shoulder. Shortly following this, although not immediately, he was taken to Hudson St. Hospital, suffering from a left sided paralysis. He remained in the Hudson St. Hospital for five weeks, and was then transferred to Bellevue, where he remained for six weeks, the fragmentary note on transfer being that he had a partial paralysis of the left arm and leg and ptosis of the right eye.

The patient is a well nourished and well built man. At the time of making these notes (May 19, 1906) he is about the ward, is feeling well, but suffers from a left sided paralysis, and from external strabismus of the right eye, with partial ptosis.

Physical examination shows the lungs to be unaffected; the heart is not enlarged; its action is slow, heavy and lagging, the systolic beat at the apex, and the second and pulmonic sounds are accentuated; the aortic sound is sharp in character. The pulse is full, moderate, compressible, both sides synchronous. Abdomen negative.

CRANIAL NERVES. *First nerve.* No disturbance of smell.

Second nerve. No disturbance of sight, no diplopia, no hemianopsia.

Third nerve. There is a distinct ptosis of the right eyelid. The right pupil does not react to light or accommodation, and is larger than the left. The left pupil reacts freely to light, and to accommodation. The patient does not see well with the right eye, as there is partial paralysis

of accommodation. Note by internes later shows some reaction of right pupil to light and accommodation. The position of the right eyeball is outward and downward; movements in other directions are impossible.

Patient had had diplopia earlier, and now shows it at times on testing.

Fourth nerve. No palsies observed.

Fifth nerve. No changes in sensation.

Sixth nerve. Superior oblique action apparently present.

Seventh nerve. The patient had a marked facial palsy on the left side when admitted. This improved considerably, but at the present time there is a distinct loss of the naso-labial folds on the affected side. The mouth is drawn to the right (to the left in hospital history). There is a distinct loss of movement on the left side of the face.

Eighth nerve. Impairment of hearing, on the right side, held to be the effect of scarlet fever.

Ninth nerve. No known involvement.

Tenth nerve. No involvement.

Eleventh nerve. Some weakness in the muscles supplied by the eleventh nerve.

Twelfth nerve. The tongue protrudes to the left. Left side is markedly atrophied. Speech is thick but comprehensible.

There is marked paralysis of the entire left side of the body attended with atrophy, increased reflexes throughout, with increased ankle jerk, knee jerk, clonus and Babinski on the left side. The leg is freely movable, the arm less so and is œdematous. The right side shows some tenderness of the thigh muscles, with sluggish reflexes. No œdema of either lower extremity. No sensory disturbances either to heat, cold or pain. The fundus is negative. Mental state is stupid. Patient sleeps a great deal in the wards. He left shortly after my examination, went home and died some six months later—cause unknown.

Case 3. Annie Zimmerman, aged 30, born in Austria, was admitted to the City Hospital on the 4th June, 1906, and entered the Neurological Ward on 1st October, 1906, under the service of Dr. Pritchard, to whom I am indebted for the privilege of reporting the case.

The patient was in a semi-stuporous condition when first seen on 1st October. On October 3rd this condition became very marked and the patient could not be roused. This gradually cleared up, but she still remained very drowsy, and seemed to sleep practically all the time when not disturbed. She was unable to give much of a history, although when she came into the hospital she said that for the past three years she had been suffering from dizziness, and had had attacks when she would fall to the ground. For a year or so she had been unable to do much work, and complained of her feet and hands. The patient was of limited intelligence.

There was no history obtainable of an acute onset.

Examination showed a poorly nourished woman, apparently 35 years of age, skin pigmented. Sounds in the chest were practically normal, there being only a slight dullness over the left apex. There heart sounds were clear. There were no murmurs, pulse was regular and of good volume, and tension not exaggerated.

Examination of the nervous system showed the following:

First nerve. No anomalies of smell.

Second nerve. The patient did not see very well in the right eye, owing to paralysis of accommodation. No optic nerve defect.

Third nerve. Ptosis of the right eyelid, slight lateral nystagmus, right pupil larger than the left, does not react to light or accommodation. Restriction of movement of the right eyeball; impossible to move it inward. It occupies an external upward position.

Fourth nerve. The patient not in a condition to respond to tests for diplopia.

Fifth nerve. No changes observed.

Sixth nerve. No changes known but difficult to separate.

Seventh nerve. Marked facial palsy on the left side, involving also branches of the facial. Jaw pulled somewhat to the right. Tongue protruded to the right, speech thick, somewhat incoherent. Patient unable to repeat complicated phrases.

Eighth nerve. The patient could hear watch at five inches on the right side, on the left could not hear watch at all.

Ninth nerve. [Could not test.]

Tenth nerve. No anomalies of respiration or heart action.

Eleventh nerve. [Could not test.]

Twelfth nerve. Taste apparently unaffected.

There is a very marked hemiplegia of the entire left side. The left arm is weak in all its movements, tendon reflexes are exaggerated on the left side. There are no changes in the tactile or temperature sense. Slight ataxia of the hands and arm on left side. Right upper extremity is normal. The lower extremities show paralysis of the left side, with increased tendon reflexes, with ankle clonus and slight Babinski on the left side. No anesthesia to touch or temperature. Both sides, deep sensibilities normal.

There is slight rigidity throughout the whole left side, although muscular power is not entirely gone. All the movements are slower on the left side. There is slight anesthesia to touch and temperature on the right side of the face, although it is difficult to say just how much of this is stupidity or actual observation.

The patient remained in the hospital for several months in practically the same condition; on November 30, 1906, he developed a pneumonia, and died December 10, 1906. Autopsy was refused.

The parallelism in these three cases is very striking. They are typical illustrations of the Gubler-Weber syndrome, the first case showing the symptoms at the onset, with flaccid paralysis and loss of knee jerk, no Babinski, no contractures, as yet; whereas the second case shows the later stages when contractures and spasticity have set in, with increased reflexes throughout. The third case is typical of those that go on to death by exhaustion.

Since hemorrhages, or softening in the cerebral peduncles are due in the first place to a rupture, and in the second to an obliteration of the arteries that supply the peduncle, a few words concerning the distribution of these arteries in the different regions of the peduncle may not be out of place. Alezais and d'Astros (*Journal de l'Anatomie et de la physiologie*, 1892, p. 519) have shown, very distinctly, that the posterior cerebral artery and its branches give rise to practically all the arteries which supply the peduncle. When obliteration takes place, the general softening that results is conditioned very largely by the frequent and full anastomosis of the arterial trunks which in this situation are

very rich. So far as hemorrhage is concerned, the only thing that need concern one are the nourishing arteries that go directly to the peduncle. These arise, for the most part, from the trunk of the posterior cerebral, usually in the ascending portion before the giving off of the posterior communicating artery; may be in the recurved portion of the circum-peduncular. A certain number of the arteries that go to nourish the peduncle come off from a portion of the posterior cerebral, which coming from the ascending branch are distributed to the corpora quadrigemina and later pass into the peduncle. d'Astros has termed this artery the peduncular jumelle. Several other branches rise as low down as the superior cerebellar, and as high up as the posterior communicating, or even the middle cerebral.*

All of these arteries d'Astros divides into five groups. (1) *The internal peduncular*, the most numerous, the greater number of which come directly from the posterior cerebral, enter the internal portion of the peduncle, but do not pass beyond the substantia nigra.

(2) *Antero-external peduncular arteries*, numerous, which generally terminate in the lower portion of the peduncle, rarely traversing the substantia nigra, to enter the upper levels. They may be found coming as far up as the thalamus.

(3) *The superficial arteries*, distributed to the sulcus.

(4) *Superior peduncular arteries*, few in number.

(5) Arteries which supply the corpora quadrigemina. These are supplied by a very rich plexus, constituting the termination of the *peduncular jumelle* artery, occasionally the superior cerebellar, occasionally the terminal branch of the posterior cerebral each carry a branch of this plexus. All of these arteries are very fine, their rupture is very possible, but experience shows that it is comparatively rare, and so far as the corpora quadrigemina are concerned, hemorrhages within the substance are very unusual.

Two of the series of branches are of special interest. Those which only traverse the peduncle to supply neighboring regions, the so-called optic arteries, internal and external. These are of less importance in the consideration of our particular subject than the second series, made up of the arteries of the third nerve nucleus.

Duret's studies (Archive de Physiologie, 1873) later worked over by d'Astros (Societe de Belgique, June 4, 1892), seem to show that these arteries which supply the third nerve nucleus, belong to an absolutely independent system from the other peduncular arteries, especially the superior peduncular arteries and are the unique supply of the nuclei of the third and fourth nerves.

As to the question of hemorrhage or softening, it may be said that softening in the cerebral peduncle due to emboli are probably rare in the vertebral system. But, arteritis, especially of syphilitic origin, is

*For anomalies see Blackburn, Journal of Comparative Neurology, 1907.

known to involve the basilar with great frequency. It has been seen that the chief nourishing arteries for the peduncle are derived from the posterior cerebral; and that the internal peduncular arteries, the arteries of the oculo motor and the internal and posterior optic are chiefly terminal arteries, not supplied with important anastomoses—obliteration of these causes a much wider syndrome than that which we have under discussion.

It is to a hemorrhage of the artery of the third nerve nucleus that we must look for the interpretation of the lesion in both of our cases. The ophthalmoplegia is complete in each, both external and internal mechanisms being involved. The hemiplegia is largely to be interpreted as secondary and as complicating.

Further interest attaches itself to the record of somnolence, and to coma in all three cases.

In a note made by Dr. Collins on Lindsay, it is recorded that the patient is very sleepy most of the time. Although this observation is made many months after the injury it is of interest to recall that in two observations by Rickards and Leube, somnolence, or an intellectual torpor, or even an incoherent delirium was present in their patients. In our first case, this incoherent delirium was a very marked feature. He had it at the time of making these notes, and his somnolence is also a characteristic feature. In Rickard's case (*Brit. Med. J.*, April 4, 1886) the patient was very sleepy, spoke only when questioned, answered only in an incoherent manner, did not care to take any nourishment, saying that he was being poisoned. Leube's patient (*Deut. Arch. f. klin. Med.*, 1887) was in a marked condition of somnolence, did not reply to questions, although neither aphasic, nor anarthric. Both of these patients died, however, very shortly after the apoplexy. My first patient is still sleepy and incoherent, two months after the onset.

d'Astros believes this somnolence to have some relation to the position of the hemorrhage and locates it on the internal aspects of the peduncle extending above the substantia nigra in its upper portions, rather than being a hemorrhage of the internal portions of the peduncle in its lower portions. In this latter region partial involvement of the opposite third nerve is likely, causing a conjugate deviation. Further, when the lesion is more superficial the paralysis of the third nerve is more likely to be partial rather than complete.

EXOPHTHALMIC GOITER PLUS OTHER SURGICAL LESIONS.

By VILRAY P. BLAIR, M. D., of St. Louis.

I think that it is probably very rare that one can truthfully say that a patient has two distinct diseases at the same time. He may have two or more distinct infections or he may have an infection and an injury, but both are in the same body and the reaction, the abnormal condition of the patient, is the result of both or all of the causes. Even though in attempting to remedy the condition, we may very properly attack one or each of the causes separately, still in considering the disease of the patient we must consider it as a whole.

Exophthalmic goiter, with its uncertainty of origin, course and result, must, when complicated by resultant lesions or lesions of independent origin, present some very nice points for the consideration of the surgeon.

In dealing with our subject in the abstract, to do any justice to it, we will have to consider a number of problems that might present in any or all such cases. One of these would be the possible causative and the possible complicating relations that might exist between the two or more elements of the disease that we are called upon to treat. Then the probable immediate result of further complicating the condition by the shock, trauma or poisoning of an anesthetic or a surgical operation. Finally come the questions of the post-operative influence on the goiter or the hyperthyroidism or the opposite question of the influence of the unremoved goiter on the post-operative condition.

In considering these I shall be very brief and indicate rather than elaborate the ideas that have suggested themselves to me. Limited as is our knowledge of the primary cause exophthalmic goiter, we know that certain influences are apparently at times the determining cause. Among these fright, shock, poisoning of sepsis, autointoxication, and, rarely, pregnancy, may in turn play the title role. Dismissing pregnancy as without the scope of the paper, of the other causes mentioned, any or all of them might accompany or follow a surgical lesion, and therefore, when the predisposing causes are present, this surgical lesion might determine the development of a goiter. On the other hand, while the lesions that are directly secondary to thyroid intoxication, venous or tracheal obstruction, are mostly of the character termed "medical," still certain surgical lesions, such as ulcerations, infections, lithiasis, varicosities, might supervene as the result of the generally depressed condition.

With regard to the influence of exophthalmic goiter upon the immediate result of the operation, it seems to me that three questions

present themselves forcibly. First, as to the propriety of giving a general anesthetic; second, thyroidism as a predisposing factor of shock, and third, the possibility of capillary hemorrhage. In a way it might be considered that these and all other questions that might arise about operations in the presence of goiter would be answered by the experience gained in operations on the goiters themselves, but this may not be entirely true because in a thyroidectomy we at the same time, with a limited amount of trauma, and with little danger of infection, cut off the source of the hyperthyroidism while in doing other operations in the presence of goiter this will not be the case. At any rate, in operations that are to be done in the presence of goiter that may consume a considerable amount of time or involve the loss of blood, the subject of shock at least should be very seriously considered on account of the instability of the vasomotor control in this disease.

In considering the possible subsequent influence of an operation upon the goiter, we have but to remember the previously cited points that fright, shock and poisoning can at times apparently produce a goiter or fan a latent one into flame, to see that operations that are accompanied or followed by fright, shock, or sepsis, might in such cases, be followed by most serious thyroidism even when the goiter or its character was unrecognized. On the other hand, it is within range of possibility that relieving some source of acute or chronic irritation might cure the condition of hyperthyroidism.

In considering the relation of the goiter to the post-operative condition, I think that, aside from an evident acute thyroidism, lethal or not, and aside from the complications that might arise from the poor reparative power of resistance of a patient suffering from chronic thyroidism, one of the most annoying complications that might confront a surgeon after such an operation, would be any of the intestinal disturbances which often accompany this disease, such as vomiting, cramps, diarrhea or distention.

As experience and observation increase, more and more cases of hyperthyroidism are recognized, until the proportion of cases of this disease is so large that it is but natural that a certain percentage must occur in patients that are the subjects of other surgical lesions. I wish to instance the three following cases illustrating some of the points previously mentioned.

Case I. Rather stout unmarried woman, 36 years old, pronounced neurasthenic, who three years previously, on account of a bladder crisis, had had the sphincter vesicæ stretched and it had failed to regain its tone. Several operations had been done to remedy the incontinence, all of which failed. While in the hospital waiting to completely recover from one operation of this kind before undergoing another, she became more nervous than ever and complained of not being able to lie down at night on account of a choking sensation. This was at first put down as hysterical in spite of a distinct, soft enlargement especially of the

right side of the thyroid that had come on at the same time. The pulse varied in rate, but averaged between 90 and 100, though it went below and above these figures, no exophthalmos and no tremor, no eye symptoms. On account of the increasing dyspnea, a partial thyroidectomy was rather unwillingly undertaken under ether narcosis on June 15th, 1906. The right half of the gland, which was fairly large for an exophthalmic goiter, was removed. It did not however seem large enough to mechanically account for the dyspnea. It was only after this right half was dislocated that a second mass was seen protruding out of the thorax which when dislocated proved to be a perfectly spherical goiter $1\frac{1}{2}$ inches in diameter. Examination showed both portions removed to be true exophthalmic goiter. As a result of the operation the dyspnea was perfectly relieved, nervousness partially so, and pulse rate averaged ten beats a minute lower. With a generous lack of encouragement on my part, the patient decided not to have further urethral operation and went back to teaching school. Several months later she wrote to me that dyspnea had returned, but I heard nothing further from her.

Case 2. Young woman, 20 years of age. Has remarkably good family history. Has had the usual diseases of childhood, but with the possible exception of the fact that she could not stand tight neckbands, was always healthy until once after rather violent exercise, she was taken with pain and swelling in legs at twelve years of age, which was called rheumatism. Lasted but a few days. Urine not examined. At sixteen years of age had pneumonia and was left with palpitation, dyspnea, general weakness and pain in right shoulder, all of which lasted about three months when her health was apparently restored, except that the pain in right shoulder returned at intervals and she was very high strung. In May of this year she was, without apparent cause, suddenly taken with vomiting and fainting, and from that time on all of the old symptoms of dyspnea, palpitation, pain in right shoulder and prostration returned, and some time in June she was told by the attending physician that she could not live through the night. In July on account of a lump that had appeared in the abdomen, I first saw her and soon afterwards introduced Dr. Walter Baumgarten into the case. Physical examination: Poorly nourished woman, undersized, very anemic, rather intense and chafing under restraint, and subject to varying moods, heart very slightly enlarged, very irregular in action. A presystolic thrill felt over pericardium and pulse about 140 to 160, an uncertain crepitus in posterior part of one lung. In the abdomen, with its upper palpable border $1\frac{1}{2}$ inches below lower end of sternum and being about 2 or 3 inches broad, was a hard mass extending across the epigastrium to be lost in the mass of the right lobe of the liver and to be rounded off and lost to the right of the left mammillary line. It was firm and resistant to pressure and flat on percussion, with a resonance above and below. It was most evident in the epigastrium and was referred to by the patient as a "swelling." It did not move with respiration, but had a free lateral

excursion when moved. Below this and deeply situated in the abdomen, was a but slightly resisting mass which seemed to be covered by intestines. On deep palpation it could be felt to lie in the right lumbar and umbilical regions and to extend down to the inguinal region. Besides a slight appearance of general puffiness there was no edema and patient's skin was fine, soft and she perspired easily. There was a slight prominence of the eyes and fine tremor of the lids, but no other special ocular signs were found. There was a fine inconstant muscular tremor of fingers and a soft visible and palpable, pulsating tumor of the thyroid which the patient had never noticed and which was largest on right side. She had an atrophic rhinitis that caused nose bleed at intervals. On limited exercise, and digitalis, all symptoms improved for a while and then returned suddenly and patient's condition became much worse in spite of numerous remedies, including antithyreoidine. She was removed to St. Luke's Hospital in a desperate condition of thyreoidism, but rest in bed, digitalis, and antithyreoidine and tincture of belladonna, caused such improvement that the patient returned home thinking herself well, and the abdominal lumps had almost disappeared. In November all symptoms reappeared and her condition was worse than before. After a preparatory course of treatment of digitalis, and thyreoidectine, the superior and inferior thyroid arteries were tied on right side after which condition was better and cyanosis disappeared. Three weeks later the right half of the thyroid was removed, both operations being done with local anesthesia. Thyroid proved to be true exophthalmic goiter. Immediately following second operation there was a purulent bronchitis from which she made a very slow recovery. Thyroid symptoms improved and pulse became regular and now averages about 90, but general condition very much better than before operation. No attempt has been made to investigate abdominal condition by operation. I think further thyreoidectomy indicated. The laboratory examinations in the case have all been negative.

Case 3. Married woman, 40 years of age, with history of recurrent, septic attacks with certain of her numerous confinements. Otherwise history rather of fairly good health. When 16 years of age she had a visible goiter that came on suddenly following a shock which receded in a week without other symptoms. At the age of 36 years, while pregnant, thyroid again became suddenly enlarged. No other symptoms at the time. Since having some teeth extracted three years ago, she had difficulty in opening mouth. At time of operation mouth opened but half inch with no palpable obstruction evident. Ten months ago first noticed choking on lying down, and nervousness, both of which symptoms have increased. She consulted Dr. Huelsmann and he found a moderate-sized goiter. Pulse 120 and nervousness, loss of flesh, free perspiration, flushing and other symptoms of hyperthyroidism. Patient improved on thyreoidectine, but later, after an appendiceal attack, condition was aggravated. Dr. Huelsmann proposed active surgical intervention, which was accepted. She was a placid-looking person and rather thin. She

said she felt nervous and could not lie down without opening her mouth on account of choking. She could open her mouth but slightly and the effort caused pain in the region of the temperomandibular joint. Examination of jaws revealed no cause for the limitation. There was tenderness in lower part of abdomen and vaginal examination showed a fixed uterus, retroverted and bound to the left by a mass of adhesions. From tenderness over appendiceal point and from history and present symptoms the diagnosis of appendicitis and pelvic adhesion was added to that of goiter. The mouth trouble was still unaccounted for. It was decided that both conditions needed treatment and that the thyroid should receive the first attention, not that the symptoms were so imperative, but it was considered unwise to attempt other surgical interference in the presence of the thyroidian. September 7th, pulse 119 while in bed with head and shoulders well propped up on account of dyspnea. Under local anesthesia of one-half per cent. soluble novocaine and 1 to 160,000 adrenalin chloride, half of goiter excised. During operation pulse rate was from 150 to 180, but it was well borne and patient's general condition immediately improved. Besides the relief of the dyspnea, the next day patient said that she felt no nervousness and could lie with hands perfectly still. Recovery uninterrupted. Examination showed the removed portion to be true exophthalmic goiter. September 24th, ether was cautiously administered and though pulse at first went to 160, by the time she was well under the anesthetic it was 100 and of good character. The whole operation was much complicated by bleeding. A long appendix, adherent to the right tube and ovary, was removed. The pelvic viscera were matted down and tightly adherent to the rectum. Further operative procedure would have been tedious and time-consuming, and as the symptoms of recent years had been such as to suggest the appendix as the offender, and as the gall bladder was healthy, the abdomen was then closed. The wisdom of this has been brought out by the fact that in the nine months which have elapsed since, there have been no further pelvic symptoms. The operation was well borne and a few months afterwards she was doing the cooking and housework for a family of seven and felt perfectly well.

A peculiar thing is that a week after the first operation the patient said she could open her mouth better and now can open it $1\frac{1}{4}$ inches and can protrude the tongue. Difficulty in opening the mouth is given as one of the symptoms of Graves' disease, but might ordinarily be placed in the class that Thomson refers to as fancy symptoms. I must confess that in this case it was so pronounced that I never thought of its being but a symptom of thyroidism.

In dealing with such cases we should be guided by our surgical sense and by the rules laid down by men of great experience for the preparation of patients for goiter operations, and antithyreoidine, thyreoidectine and the antithyroid serum, and other efforts along the same line, should receive consideration.

TRAUMATIC VENOUS THROMBOSIS.

By W. P. KENDALL, Major and Surgeon, U. S. A.

Because of the comparative infrequency with which cases that form the subject of this paper are met, and because of the seriousness of the condition, when it arises, together with the uncertainty attending the diagnosis, I have thought that a review of the subject with the report of a case might interest.

While cases are from time to time reported, the literature upon the subject is not voluminous, and some features are still unsettled; if anything can be added which may help by throwing even a little side light upon these, it should be acceptable. The one point of this paper is, the suggestion of a new factor as a possible immediate cause in the production of mesenteric venous thrombosis, viz., traumatism.

So far as I am able to learn, this has not before been recognized, or, at least, accepted as a cause. No cases are reported.

Those who have access to the Journal of the American Medical Association will recall an article upon the subject, which appeared in the June and July numbers during the year 1904; practically all that is known was there reviewed and any discussion must largely be upon points there brought out. I shall, therefore, content myself with a review of the salient features, and ask your special attention to the report of a case in which there seems to have been no other cause than traumatism.

For the sake of comparison, and, in order to refresh our memories, I shall run over, as concisely as possible, the entire subject; but in doing this many details must, of necessity, be omitted; for these I refer you to the article already mentioned, a careful perusal of which will, I am sure, be of interest.

Pathology. The results of venous thrombosis and arterial embolism are, when at all marked, so similar they will be considered together. That congestion should occur in the one and anæmia in the other is natural to expect; this, however, is not always the case, and, whatever the cause, the two are so apt to merge, it is difficult to consider them separately; speaking generally, this will not be attempted.

The occlusion of either an artery, or a vein, is attended with more or less shock, greater in the case of embolism. If the artery has been closed the immediate effect is a condition of anæmia; this may continue, or may be followed by congestion. The anæmia can hardly occur with a thrombus; on the contrary, the immediate effect, coming on slowly, must be that of congestion. Following the anæmia of embolism anastomosis may become complete and the parts may be restored to a normal condition (these cases, however, being infre-

quent), or the condition may progress to the extreme result,—gangrene of the part involved. As the anastomosis is better in the large than in the small intestine, the effect in the former is less liable to be extreme. With the interference of the circulation and the subsequent congestion, fluids of the blood are poured out; these, or pure blood it may be, are found in the tissues, peritoneal sac, and intestinal tract. The result is a discoloration and thickening of the tissues. The discoloration varies from the pink of simple congestion to that of even greenish black of gangrene. The thickening ranges from a barely recognizable condition to one in which a palpable tumor is produced. Usually considerable fluid, often blood stained, is found in the peritoneal sac; this may or may not be accompanied with fibrin, matting the coils of the intestines together, depending upon the duration of the disease; the intestinal tract may contain merely the fluids of the blood, or hemorrhage may have taken place, the contents being, when old, more or less of a tarry nature; or, if recent, of pure blood. The area involved depends of course upon the size of the vessel or vessels affected. While it may be of great extent, more frequently it is limited and the diseased tissue may not be more than a few inches in length. Generally the circumference of the gut is involved. The tumor has, as a rule, a pretty well defined, though often irregular, line of demarkation; the engorged vessels are distinctly visible and feel like cords under the finger. Later, as an attempt at reparation progresses, all signs are increased, the discoloration deepens, the thickening increases, and the area of congestion markedly widens, until the effects are seen at a distance of several feet from the site of injury; the mesenteric glands become swollen while ulceration of the mucous membrane of the intestine is a common occurrence; gas accumulates, and the gut is distended. This, however, is not marked in the early stages, though it is decidedly so in the later ones.

In all but the very mild cases, peritonitis sooner or later develops accompanied by the usual signs and symptoms.

Etiology. The causes leading up to either an embolus or a thrombus are numerous, and include all those diseases in which changes have taken place in the walls of heart or vessels, such as syphilis, cirrhosis, rheumatism, etc.; diseases in which bacteria have found access to the vessels; phlebitis, appendicitis, enteritis, typhoid fever, and sepsis from any cause; following these, the more common causes must be considered; those where a secondary condition has followed upon a mechanical obstruction; thrombosis of the veins may be produced in this manner by any tumor pressing upon the vessels, as cancer, or cirrhosis of the liver. It sometimes follows upon an arterial embolism.

Lorenz reports a case where it had followed an obstruction of the arteries due to a thickening of the intima. Koester believes that

slowing of the circulation is not, in itself, sufficient to cause thrombus. Neutra, on the hand, holds that this is sufficient; the latest writers accept Neutra's opinion as being supported by the weight of evidence; it furnishes the only plausible theory as to the cause in the case under discussion. Though it may possibly have existed, no disease of the vessels or organs was discovered, while the history records an injury sufficient to produce, temporarily at least, a paralysis of the mesenteric nervous system without other discoverable injury.

Course. Regarding the course the disease takes, writers have undertaken to divide the group into acute and chronic cases. An analysis of those where a reliable diagnosis has been made shows this to be unsatisfactory; beyond the fact that about 50 per cent terminate fatally within the first three days while the other 50 per cent are distributed over some two months, no such division seems to be possible. Of the 50 per cent which come to an early conclusion, there is about an equal division between venous thrombosis and arterial embolism.

Of the so-called chronic cases, i. e., those covering a period of several weeks, those where the veins are primarily affected, are most apt to show a steady progression; while those where the artery is involved, except the extreme cases, often show an interruption or intermission. Like those running a more acute course, both classes are about equally represented; more than this imperfect and unsatisfactory division little has been accomplished.

In 95 per cent of all cases, the course progresses steadily and rapidly to a fatal termination.

Symptoms. In the consideration of the symptoms, unfortunately, there is nothing characteristic, while all point to a serious abdominal lesion. Practically all are found with other conditions, hence lose much of their value in attempting to make a differential diagnosis; this will be apparent as the more important ones are considered individually. What has been said of the symptoms applies equally to the signs; the only question is, as to the exact nature of an existing serious abdominal lesion.

In a typical, well-marked case, shock, with the usual indications, is a pronounced feature; the pulse is frequent, and feeble; the respiration shallow, and increased in rapidity; palor of the skin and an anxious expression are noticeable. These all vary in degree, depending upon the extent of the injury. They are usually accompanied with pain, often severe, fairly well localized. Nausea with vomiting is a frequent symptom; the vomit may be the normal contents of the stomach and intestines, or it may contain blood. Depending upon whether paralysis of the mesenteric nerve supply exists or not, constipation may be a symptom; and if not, a bloody diarrhœa may occur. By some this last is considered an almost necessary

factor; it occurs in between 40 and 50 per cent of the cases. If paralysis exists, the gases are retained, with resulting tympanites. This, however, does not occur early, except in the more serious cases; on the contrary, it arises later in nearly all. At first the temperature is liable to be subnormal; as the disease progresses, and inflammatory reaction sets in, it rises, and may reach 104° or 105° .

Physical Signs. The physical signs are as little characteristic as are the symptoms; there is nothing which, considered alone, can be relied upon; the attempt at protection, indicated by the rigidity of the abdominal muscles, is seen in this as in other acute lesions of the abdominal cavity. Both a tumor and fluid may be palpable, but these also are found in other diseases. That a serious abdominal condition has arisen is recognized, but a differential diagnosis is hard to make; fortunately this is not necessary. An exploratory incision is indicated, and the sooner it is made the better for the patient.

Treatment. Regarding treatment, slight opportunity for discussion presents; with 95 per cent against it, little reliance can be placed in the efforts of nature. The few recorded instances where spontaneous recovery has occurred only emphasize the necessity for immediate interference. When the pathologic condition is considered, any temporizing seems as folly, and the suggestion of one writer to employ deep massage, is to be mentioned only to be condemned. It is not understood upon what line of reasoning such treatment can be based; the less a vascular clot is disturbed, the less damage it is liable to do. Localized in the abdomen, there is an opportunity to reach it; in the brain, there might not be. To us, nothing but operative procedures seem worthy of consideration, and of these, two radically different methods are suggested; choice between them will depend upon the extent of the lesion and the skill of the operator. The first consists in withdrawing the affected gut well out of the incision and, having excised in the healthy tissue, stitching the open mouths to the edges of the wound, meanwhile protecting thoroughly the abdominal cavity by walling off. The advantages claimed for this method, which is recommended by the reviewers already so freely quoted, are that it is more easily and quickly done, consequently taxes the patient less; that it allows for the escape of retained gases at the same time permitting of a free inspection of the condition and its progress. The second is exsection of the entire affected area; that operators will be influenced in their choice by the conditions found, together with those which surround them, and their own dexterity, must be accepted. The first seems better adapted to those serious cases where, because of the patient's condition, the more radical operation is contraindicated. The second, to those where the involvement is not so great as to destroy hope. Elliott removed forty-eight inches, with a recovery. It seems to be the rational procedure. In either case,

the incision must be in healthy tissue, consequently the one factor in deciding the choice of operation should be the ability of the patient to support the longer one; other things being equal, it is the most surgical.

Having reviewed concisely, with the omission of many minor details, the history and course usually pursued in cases of both venous thrombosis and arterial embolism, permit me to recite that of my own. Because of its uniqueness regarding etiology, and because it is recognized that a positive diagnosis has not been demonstrated, I shall go more carefully into details than would otherwise be necessary. When the history and the macroscopical condition are considered together, the claim of having met with an undescribed factor in the causation of the disease, seems to be well founded, notwithstanding the absence of a demonstration.

Paul Blasberg, male, age 21; residence, New Jersey; occupation, soldier. Intelligent, well developed, apparently healthy man; admitted to hospital May 21st, 1905, at 4:45 p. m. Family history, negative. Previous history: No history of disease of any kind can be found. Evidences of either alcoholic or venereal history are negative. Record, good. Has been under observation for over two years; denies ever having had diarrhœa. Present history: Up to Friday morning, May 19th, two days before admission, he had been perfectly well. Friday morning he rode a bucking horse and was pretty badly shaken up, but not thrown. During the rest of the day, though suffering no marked pain, he had decided discomfort; that night, however, some twelve hours later, he experienced pain, which gradually grew worse, in the right umbilical region. Being of a plucky disposition and thinking that it would pass away with rest, notwithstanding the fact that his pain was gradually increasing, he did not go on sick report until 4:45 p. m., Sunday, May 21st, some sixty hours after the receipt of injury; at that time he complained of constipation and pain in the abdomen; the bowels had not moved since the receipt of injury; his temperature was 103°, pulse 88, respiration 27, and his face wore an anxious expression; there had been no vomiting. A physical examination upon the table disclosed nothing further except rigidity of the right rectus muscle, with decided tenderness over a point about one inch inside of McBurney's; a little too far in for an ordinary appendicitis. Because of the tenderness the examination was unsatisfactory. Notwithstanding the history, it seemed to be an acute appendicitis and directions were given to have him prepared for an operation in the morning, and 15 c. c. of Epsom salts, every hour until bowels moved, were prescribed.

May 22nd. The patient passed a fairly comfortable night; the first and second doses of salts were retained, the third was rejected. Bowels moved five times during the night; stools watery and con-

tained no blood. He thinks that he feels better, the tenderness seems to be less, no tympanites exists, no sedative was exhibited; there is a suspicion of a tumor, but it is not positively made out; temperature 102, pulse 92. As he was not anxious to have an operation, it was thought safe to postpone it. Leucocytosis, 6400; albumen, negative.

May 22nd, 6:00 p. m. Temperature rose to 104 1-5.

May 23rd, 9:00 a. m. Temperature 102 2-5, pulse 92. Patient seems to be in about the same condition as at this time yesterday; neither signs nor symptoms have apparently increased; bowels have moved four times during the past twenty-four hours; stools liquid, abdomen is comparatively flat. Both pain and tenderness continue, and an ill-defined tumor is detectable. Leucocytosis, 9800; albumen, a trace; no vomiting.

May 23rd, 6:00 p. m. Temperature is again 104 1-5. An operation is considered imperative, and he is ordered to be gotten ready for the next morning.

May 24th. Temperature 103 2-5. No doubt of the presence of a tumor exists; it is just to the inside of McBurney's point and extends inward. Abdomen slightly distended. Pulse 100, respiration 28, expression anxious, heart and lungs normal.

Under a general anæsthetic an incision was made through the external border of the right rectus abdominis. Upon opening the peritoneal sac, serum slightly blood-stained flowed out. No gas appeared. The coils of the intestine were not matted together, neither were there any flocculi seen. The appendix was readily located and found to be in a slightly congested and swollen condition; notwithstanding the fact that it was considered insufficient to account for the severity of the symptoms, being abnormal, it was amputated; further examination, after this had been done, disclosed as follows: The intestines well filled with gas, the vessels of the caput coli slightly congested; the remainder of the colon was normal. Beginning at the ileo-cecal valve, and extending upward for several feet, the ileum was in a state of marked congestion; this was greatest at the valve and diminished gradually as the distance increased; for several inches (6 or 7) the coats of the ileum were thickened, forming a tumor which resembled an intussusception. At the time this was not recognized as being well defined, the shading into the upper portion of the gut being gradual; the vessels were engorged; afterward a bystander remarked that they had reminded him of varicose veins; the mesenteric glands were very considerably swollen. The finger, passed from below, showed a patulous condition of the valve, the lips of which, however, were elongated, due to the congested condition of the mucous membrane. Because of this fact the thought of an intussusception through the valve seemed to be supported. As the area apparently involved was so great and the operation already

prolonged, exsection was not considered to be advisable. The abdomen was consequently reluctantly closed.

Instead of improving, the patient's condition grew worse, consequently, as a *dernier ressort*, the abdomen was again opened the next morning through the original incision, and the tumor together with the caput coli, about 18 inches in length all told, removed; the abdomen was then closed. Death followed in about twelve hours.

Examination of the exsected portion showed a tumor of the lower end of the ileum; this was formed by all the coats of the gut, was cylindrical in shape, well defined, of mahogany color, and about 7 inches in length. When opened the walls were about $\frac{1}{4}$ of an inch in thickness; the mucous coat was studded with small confluent ulcers over an area 3 or 4 inches in length by about $2\frac{1}{2}$ inches in width. With the exception of one small ulcer, some 8 inches higher, no other evidences of disease appeared; the ulcers were superficial and there were no signs of perforation; the contents of the intestines were fecal, without signs of blood; no signs of hemorrhagic extravasation were found. At the necropsy nothing more was developed. No signs of disease were found in any of the organs or vessels.

The report of the pathologist throws no positive light upon the subject of causation. No mention is made of an examination of the vessels, which is to be regretted. It seems certain that this step would have aided us, though the history and macroscopical appearances are, in themselves, convincing. Examination of the heart and other organs disclosed nothing abnormal.

Regarding the course which the disease had taken, the following deductions were drawn: The pulse rate, which was comparatively slow at the time of admission, was an index to what then existed sixty hours after the receipt of injury; it had probably been more rapid during the early hours of shock which had now modified.

The symptoms of peritonitis did not arise until some five days after injury and after development of the disease; it was, therefore, secondary to this rather than the immediate result of the injury.

No acute pains, such as are to be expected after perforation, were complained of.

The absence of the bloody stools is unimportant; they occur in only 50 per cent of the cases.

The fact that the bowels answered to the exhibition of laxatives is explained by believing that the paralysis of the mesenteric nervous system which, emphasized at the point of greatest injury, had been productive of the clot, was gradually wearing off, and that a general peritonitis had not as yet developed.

In advancing a claim for a new, or an unusual, condition, no link in the chain of evidence should be missing; realizing that this weakness existed, I had some hesitation in presenting this case, and it was only when I called to mind that the entire fabric of our knowl-

edge is built upon the observations of the many rather than of the few that I concluded that it should be offered for your consideration. In the opinion of myself, and some of my friends with whom the case has been discussed (notwithstanding the absence of positive proof), no doubt exists as to the diagnosis; granting this there remains then, for discussion, the cause only.

It is fair to any question, that it be considered from all its aspects, and that the finding be with the weight of evidence; though the cases are exceedingly rare, one of the best observers, Neutra (and his opinion is accepted by the latest reviewers), holds that a slowing of the circulation is sufficient to cause venous thrombosis; this slowing is always caused by a paralysis of the vasomotor nerve supply. That there was more or less paralysis of the mesenteric nerve supply in the case under consideration, is proven by the obstipation which existed in a previously regular individual, for some sixty hours immediately following the receipt of injury. No lesion of vessels or other organs was discovered. Under the circumstances it seems reasonable to believe that the condition found stood in direct relation to the injury received, and that traumatism alone was responsible for a mesenteric venous thrombosis.

SOME VITAL POINTS IN TUBERCULOSIS.

By LOUIS M. WARFIELD, M. D., of St. Louis.

The subject of the early diagnosis of tuberculosis of the lungs is trite and yet not old. The paramount importance of this subject to the afflicted individual makes it an ever new one, and the difficulties encountered in definitely stating that a person has the disease should make us, as guardians of the public health, constantly strive to perfect ourselves in diagnosis. It is not intended here to enumerate the points that are of value in making an early diagnosis. It is more my desire to call attention to a few features that seem worthy of careful consideration by us.

It is generally admitted that the diagnosis in the very early stages is most difficult and at times quite impossible even after frequent and most careful examinations, temperature charts, tuberculin subcutaneously and other methods that help us to arrive at a conclusion, have been exhausted. A point to be remembered is that when we are able to state definitely that the disease is present, the patient, however well he may look or feel, is an ill person and should be treated accordingly.

One cannot learn diagnosis from books or separate medical articles. As Dr. Lyman¹ has recently said, the medical schools are the places where this should be taught. Clinics are held on advanced cases. The outlook is always grave. The lesions are evident and the student leaves college with a false conception of lung tuberculosis. Suppose a person states that he thinks he has consumption, can anyone on hastily examining the chest say positively that he has not? Suppose there is loss of weight, tired feelings, very slight rise of temperature to 99.2° or 99.4° every afternoon, there is no cough, no sputum; or if there is slight cough and a little sputum, no bacilli can be found, can anyone state in the absence of definite lung signs that the person has not tuberculosis? It is not just to the patient to tell him that he has no trouble. Three or four months later he comes in with a history of a recent hemorrhage and there are rales and other signs at one apex. Then bacilli may be found, but this is a second stage case and under the best conditions only about one half of such cases recover.

It is of the utmost importance to bear in mind that the finding of bacilli is *not* necessary for a final diagnosis. Unless the process in the lung has broken down and communicates with a bronchiole there cannot be bacilli in the sputum. Many a man has lost his life because of a report from a bacteriologist that no bacilli were found in the sputum. While the laboratory has proven of immense value to physicians, it has been at times a curse. This is not the fault of the laboratory but of physicians who fail to interpret correctly the laboratory findings. It may be stated as a law that never does the negative report preclude the possibility that

¹Journal Amer. Med. Ass'n, Feb. 29, 1908.

the disease is present. This can be said of malaria, typhoid, diphtheria, meningitis, etc., as well as of tuberculosis. Tubercle bacilli in the sputum represent the beginning of ulceration and strictly belong to the second stage of the disease.

How are we to make an early diagnosis? No one can tell us. We must be taught on the living patient by those who realize to the full the importance of early diagnosis. Without going at all into differential diagnosis there are a few points that are worth noting.

1. An open attitude of mind but yet a critical attitude must be the first essential. Should there be any prejudice it is best to regard all suspicious cases (in our own minds, of course) as tuberculosis until we can prove the contrary.

2. A most important point is a careful history. The apparently trivial things that the patient is apt to slur over may give us much valuable information. Scarcely anything is too unimportant to note when we are diagnosing early tuberculosis.

3. After the history comes the examination of the patient. This does not consist of looking at the tongue, taking the pulse and temperature and putting the ear to the chest or a phonendoscope over the clothes. *The chest must be bared.* That is as close as we can get to the lungs.

4. The examination is no easy matter. A good light falling on the bare chest is essential. Time and patience are two important requisites. And with these there must be the sight trained to detect the smallest visible differences; the touch to feel them; the hearing to differentiate between truly abnormal and only physiological sounds in corresponding parts of the lungs. This skill does not come at once. To some it may never come, to others it comes gradually. None may acquire it in a medical school. The principles alone can be learned.

5. After careful examination there must be further careful examinations of the patient and repeated examinations of the sputum. All this is time-consuming but there is a human life at stake and the person must know so that he may order his life according to rules made to regain his health. Temperature records and pulse rates, before and after exertion, blood examinations, the tuberculin tests, etc., also should be done. These cannot be done in a day, possibly not in a month. The fact is that patients should be taught to be patient. They should be told frankly that the matter is of sufficient importance to be gone into most thoroughly and they should be frankly told that they have tuberculosis, if that is the diagnosis, and stress be laid on the fact that they are ill and to get well brooks no trifling.

There are cases, true of the second or third degree, in which chills, fever and sweats occupy the centre of the clinical picture. The paroxysms may even simulate malaria so closely as to come every second day. In these times when a microscope should be a part of every physician's outfit, such a gross error as the confusion of the irregular fever of tuberculosis with that of malaria should never be made. Even without the

microscope to show us whether or not the malarial organism is present in the blood, careful physical examination and a study of the temperature for several days, should give us an accurate diagnosis. Let us remember that the diagnosis, malarial fever, is a very definite diagnosis based on the actual seeing of the causative agent. Let us not forget that the specimen of sputum sent to be examined may show no tubercle bacilli at that particular time. The next day's sputum may be filled with them. Were it not for the fact that such errors are made daily, there would be no need to call attention to this point. Most textbooks are much misleading in stating that the onset of tuberculosis may be with symptoms simulating malaria. The onset took place long before, weeks or months even. No case with such symptoms could by any stretch of definition be put under the class of early cases.

A patient comes to one of us and states that for a month he has been rapidly losing weight, has had cough and fever and night sweats. Now, nothing is more certain than that the disease did not begin one month ago. Frequently such a history is obtained. About two years ago he had a little cough, not much, however, and one day while in a paroxysm of cough brought on by laughing, etc., or during some muscular strain, he had a salty taste and spit up blood. He went to see a doctor who gave him some medicine that stopped the blood and told him it probably came from the stomach. Patient went away to the country or even went back to his work apparently well.

Such a history, one of many actual cases, shows us the value of history taking. It shows us that the disease had been present over two years. It shows us the *significance of blood spitting*. There are men (Anders, etc.) who maintain that hemoptysis may be produced by diapedesis of corpuscles from a congested area as well as from a rupture of a vessel. While blood-streaked sputum may be due to the diapedesis of corpuscles, it is scarcely conceivable that actual hemorrhage should come from such a source. However that may be there is this bare fact staring us in the face; blood spitting most often means tuberculosis of the lung. There may never be hemoptysis in protracted cases that eventually succumb. There may be the so-called hemorrhagic cases where hemoptysis is frequent. Some persons apparently feel better after a hemoptysis and some physicians have stated it as their belief that cases having frequent hemorrhages do better than those that never spit blood. That I do not believe. The important point is this. *Blood spitting is always an exceedingly serious matter irrespective of its source.* If from the stomach surely this is no light matter. There may be ulcer, cancer, oesophageal varices due to cirrhosis or to some other interference with the portal circulation. Small bleedings may come from the nose or teeth. These should be examined. However, the cough followed by the salty taste is almost pathognomonic of hemoptysis particularly if this occurs in a person apparently previously healthy. This is no little affair. This is tuberculosis and students should be taught this until they realize it to the fullest extent.

We still hear it said that if a man has consumption he can never get well. If we make a distinction between tuberculosis and consumption, meaning by the former a slight lesion and by the latter advanced tuberculosis, then we may admit that this is true. However, if we make such a distinction do not let us fall into the old error of the dual nature of tuberculosis. Tuberculosis of the lungs and consumption being one and the same thing we may agree to call only advanced tuberculosis, consumption. This distinction is important and it is well to have it clearly in mind. Then admitting this, let us state that tuberculosis is curable in from 63-85 per cent. Consumption is fatal in 70-90 per cent., the most that we can hope for is an arrest of the process. And moreover this fact should be branded into the brain of every student, every doctor, every layman: The earlier the disease is recognized the greater the surety of a complete recovery. Again, let us state that the presence of tubercle bacilli is not necessary for a diagnosis.

Some deny that tuberculosis is ever cured. To those it can only be said that failure to make an early diagnosis is responsible for that opinion. When we see the numbers of persons dead of various diseases who show unmistakable evidences of a healed tuberculous process, can we deny the evidence of our senses? Many such persons never showed symptoms sufficient to reveal the presence of tuberculosis. It is my own belief that a mild infection in some persons with good resisting powers is revealed by a period of several weeks of bad health and general malaise. A vacation or a little better care of the body gradually brings such persons back to health. No one can absolutely deny the possibility that such a condition may be tuberculosis. In fact the post mortem statistics showing the frequency of healed lesions would tend to support such a belief. The fact is that by the time we can diagnose what we call the earliest lesions, a really considerable part of the lung must have become involved in the process.

Having made a diagnosis, the patient wants to go to another climate. He knows of people who went to Texas or Colorado or New Mexico, etc., etc., and lived in the open air. They were cured. We admit that. But why not use your own climate to the best advantage? In general, a change of scene and climate (personally I believe scene more than climate) is good for the strong as well as for the sick. To ship the advanced consumptive off to some far away clime is not good advice. To say the least, it is cruelty. If there is one thing more than any other that aids in the cure of the tuberculous, it is cheerfulness. Consider the loneliness of the invalid among the bands of harpies at the usual health resorts. If a man can afford to transport himself and family or, if without a family, he can afford to have the best of everything, well and good. Let him hunt the will-o'-the-wisp of health from one place to another. He will find that however near he may get to it, it is always at the next place, until worn out he comes home to die. Possibly his home coming may be brighter, and surrounded by friends and careful attention,

he awakes to the realization that the will-o'-the-wisp has at last been caught.

Personally I believe that it is only occasionally that it is good advice to urge one to go away. In general, people can be cured in their own homes and the man who conscientiously treats his cases at home obtains better results than he who rushes his patients to some special climate. Let me not be misunderstood. Climate is an excellent adjuvant, but climate alone has never accomplished any cure of tuberculosis. Let the tuberculous do in his own climate what he does in some health resort and the results will be just as good if not better.

There is no more fatal advice given than that of telling patients to work and exercise. It is rest that is needed. When there is fever, absolute rest in bed must be insisted upon. It seems an insult to the intelligence of the readers of this JOURNAL to urge what seem to be self-evident points, but the importance of these points is the excuse. When we see early cases developing into advanced cases because they were told to walk the disease off; advanced cases with high fever rapidly becoming worse because of the advice to exercise, we feel it a duty to urge the importance of rest. The man who fights his typhoid fever generally has a hard time and not infrequently the disease wins. The man who in the same manner fights his tuberculosis is almost always the loser. Exercise has its distinct place in treatment but it is a therapeutic measure that should be regularly supervised by the physician who understands its limitations.

Attention to every detail of the patient's life increases his chances of cure. The doctor who is too busy to supervise personally his cases, certainly is not giving his patients a fair chance to get well. No one drug is a specific, no one method will apply to all cases. Even specific therapy with the various forms of tuberculin is suitable only to selected cases. To individualize means success in treatment if success is to be had.

It is borne into me daily that the medical profession is not fully alive to the great responsibility that must inevitably be shouldered by us. As guardians of the health of human beings, we seem singularly derelict in our duty towards our fellows. Can anyone deny that the doctor who allows an early case to become one with cavity formation before he really examines the patient, is not responsible for the death of that person even as he is responsible who through carelessness shoots a man? No court of justice is here to sit in judgment on criminal carelessness in regard to disease. Ignorance might be excusable, there should be no excuse for carelessness. We are guilty of a gross breach of trust if we do not find out by all means in our power, at the earliest possible moment, the exact nature of our patients' illnesses. No one is always right. No one expects any of us to be always right, but we are expected to be conscientious and to give the best that is in us to those who entrust their lives to our care.

After all, it is better to err on the wrong side, that is, it is better to treat a suspected case of tubercluosis as one of tuberculosis than to pass it over flippantly because absolutely definite signs are not present.

If every physician examined carefully every case of cough or of rapid loss of weight, there would be fewer advanced cases. There would thus be a saving of life; for under proper care, one-half of the second stage cases may get well, but only one-tenth to one-eighth of the advanced ones. Moreover, the recognition of the disease at even this comparatively late stage would enable the afflicted to take the precautions against infecting others and undoubtedly many a life would thereby be saved.

Metropolitan Building.

SIGMOIDITIS.

By W. H. STAUFFER, M. D., of St. Louis.

In the study of life as manifested in its lowest and highest forms, two factors always claim our attention, namely, assimilation and elimination. As we advance from the cell to the alimentary canal we find various changes according to the needs of the organism. In man we find, in health, the most perfected mechanism extending from the lips to the anus. It is not my purpose to burden you tonight with the study of all the points of interest we find along the banks of this important canal, but to ask you to rest and refresh yourselves in what has been, until recently, an undiscovered country.

The sigmoid is placed between the process of assimilation and elimination, and its importance will be appreciated when you consider the value of a sewerage system scientifically constructed; for as the health of a city depends largely upon the proper disposal of its offal, so every individual should look well to his outlet. From its anatomical construction and relation to adjacent organs, it is easily seen that disease of the flexure is well worth our consideration. It is generally located in the left iliac fossa. Its fold of peritoneum is attached in the fossa, and is long enough to allow the gut to hang over the brim into the pelvic cavity. At the lower end of the flexure the fold is quite short, and holds the part up close to the sacro-iliac symphysis. It can be seen, then, that the sigmoid flexure hangs down in the pelvis like a bag when it is not distended.

I am fully convinced by observation in examining a large number of persons, and taking into account the anatomical construction of the rectum, that it was never intended as a receptacle of feces between the acts of defecation. If the calls of nature are not heeded, the fecal mass is lifted back into the sigmoid flexure, and there remains until the next effort is made. During this time, of course, the watery constituents of the mass are reabsorbed, and the remainder is left in a dry, hardened condition. What could be the source of greater mechanical irritation than this? Is it any wonder then, that a congestion, an inflammation, and lastly, an ulceration, of the gut could occur? This furnishes the key that to my mind explains the varied symptomatology and pathology of the sigmoid. Dilation of the flexure is frequently found in old people of sedentary habits who eat too much and do not heed the calls of nature.

After a prolonged and fruitless effort on the part of nature, the circular fibres at the inferior end of the sigmoid become hypertrophied and the lumen becomes smaller and we find, in such cases, that the flexure is never empty. The symptoms caused by a distended sigmoid

are of a local and constitutional nature. The pressure on the reproductive organs of the female cause pelvic cellulitis and the usual pain in the pelvis and back, and pressure on the uterus, with a long train of symptoms, is sure to follow. The constitutional symptoms are largely caused by autoinfection. Some of our neurologists tell us that the condition is a neurosis, and that rest with bromides is all that is needed. Gynecologists have removed ovaries and tubes when they should have removed feces. Floating kidneys have been anchored or removed when the overburdened sigmoid was ready to make its contribution for the benefit of vegetation. The evil effects of retained feces are important and far reaching, and affect every organ and tissue of the body.

Fermentation in the alimentary canal is largely kept down by the action of the acid gastric juice. The acidity may be temporarily neutralized in the duodenum, but an acid reaction is found in the contents of the bowel when they reach the ileocecal valve, and as there is no fresh supply of acid below the stomach it seems probable that the reaction is acid until the colon is reached, or at least the cecum. During its progress along the small bowel, active absorption is going on. This seems to be completed when the cecum is reached, and we may assume that any absorption from that gut is of questionable utility. It is certain that the toxicity of the now fecal mass increases every hour that it is retained in the large bowel, whether this be long or not. The bacteria multiply to such an extent that billions of them are excreted with the feces daily. If the liquid parts of the mass are absorbed, the chemical action is slower, but the toxins develop greater virulence. The loss of elasticity of the bowel coats, due to advancing years, sedentary life and the use of foods containing no irritant residue, conduce to stasis of the mass. The pressure of additional matter causes perforation of this mass, and daily evacuations may continue with the retention of feces for many months. I have been assured by patients that seeds and other recognizable ingredients of such masses had positively not been swallowed within seven months of the time they were evacuated.

What are we to think of the intestinal mucosa thus lying in contact for such extended periods with the most dangerous toxic substance known, its cells constantly traversed by the poisonous products of bacterial growth, and yet retaining vitality and function?

The patient develops the following condition: The face is pallid, the eyes surrounded with heavy dark rings, pimply; itching generally, the eyes heavy, tongue coated, the breath bad, appetite mechanical, a variety of digestive ailments present, general mental and physical depression, the bowels usually kept in some order by daily laxatives, the urine heavy and offensive, morning headaches frequent, catarrhal attacks frequent and chronic catarrhs varied by subacute or acute exacerbations. In some cases there is a peculiar itching toxin developed and the patient is seized with intolerable anal pruritis after each passage. As a rule, you will find him firmly convinced that he is "uricacidemic," and taking some nostrum for that alleged malady.

The electric sigmoidoscope marks as great an advance in the diagnosis of lesions in the sigmoid flexure and upper rectum, as did the laryngoscope in the diagnosis of lesions of the larynx, or the cystoscope in those of the bladder, and it has now become a necessary adjunct to diagnosis in all difficult cases of diseases of the rectum and sigmoid flexure. The nature and location of the lesion can now be definitely located and properly treated.

We find here all the various morbid growths and catarrhal conditions. As in the pyloric end of the stomach so we find in the constricted portions of the sigmoid, the most inviting field. It is here where carcinoma is most frequently found, and as in other parts of the body, is generally

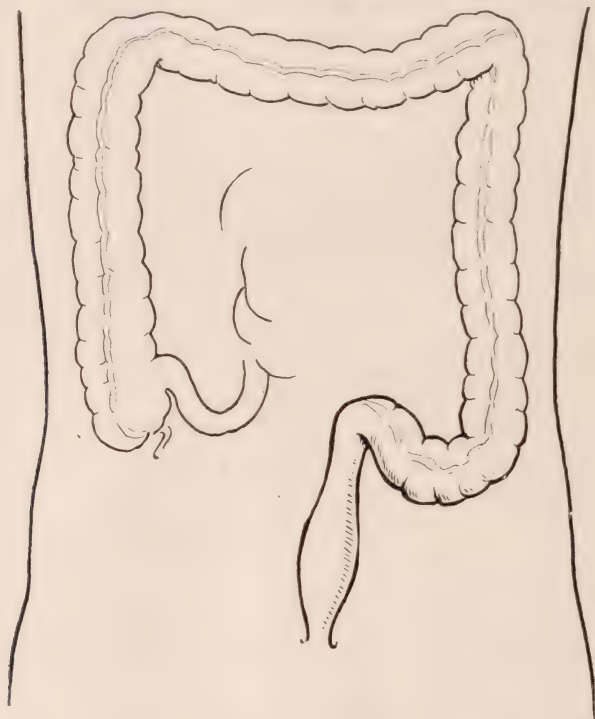


Fig. 1. Normal.

preceded by a prolonged stage of ulceration. Irregularity of evacuation, as to time, quantity or quality should be a signal for investigation. The source of blood should be definitely determined, and any abnormal tissue subjected to microscopical examination. Frequent examination of all exudates taken from various parts of the sigmoid is imperative.

Tubercular and syphilitic ulceration must be differentiated from those caused by a functional or mechanical condition. Not infrequently we find in the sigmoid definite lesions of constitutional diseases before they are suspected elsewhere. Such lesions may only be found in the rectum, and furnish a good illustration of the baneful effects of the indiscriminate use of the enema. What is often a purely local disease and as such yields readily to treatment, becomes a complicated, difficult problem after the infection is carried into the sigmoid and colon.

Rest and drainage are the leading factors to be considered in the treatment of sigmoiditis. Dr. S. G. Gant reports a number of cases successfully treated by sigmoidipexy. There are, no doubt, some cases where this procedure is justified by the results obtained, but in many cases relief, and often complete functional restoration can be procured by other methods. Every case must be properly diagnosticated and treated accordingly. I know of no condition in which the coöperation of the patient is of such vital importance. I have histories of eighteen cases treated since July 1, 1906, by the following method, which is best illustrated by giving you briefly the salient points as elicited in the following cases.

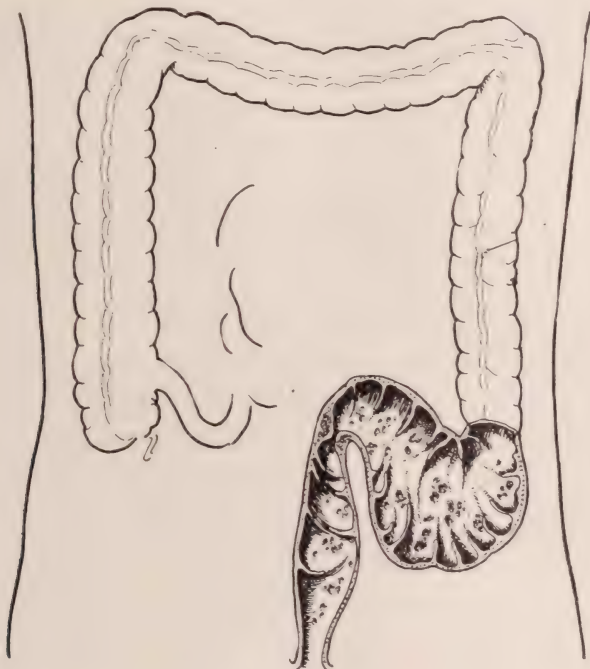


Fig. 2.

Case 1. Fig. II. R. W. M., aged 40, locomotive engineer, first consulted me Sept. 30, 1906. Has not been well for five years, when he gives a history of having had acute dysentery. Family history negative. Has never had any venereal disease. Present weight, 140 pounds; has lost 35 pounds in the last two years. He is anemic, irritable and complains of being tired all the time. Morning temperature subnormal; afternoon and evening record shows elevation of from two to three degrees. Respiratory organs normal. No heart lesions can be discovered aside from temporary functional disturbances. Quantity of urine 20 ounces per day; sp. gr. 1030, acid, no sugar, no albumen; traces of indican and a heavy deposit of uric acid. No desire for food and great distress after eating. Bowels move from 15 to 25 times during twenty-four hours. Odor of discharge resembles very much that of the feces in the second and third weeks of typhoid fever, multiplied by ten

as to penetration and endurance. Examination of feces shows shreds of mucous membrane pus, blood and partially digested food. Examination with the proctoscope and sigmoidoscope revealed a characteristic and promising field for both surgeon and internist, which must be seen to be appreciated. Ulceration in its various stages from the anus to the descending colon. Marked constriction of the circular fibres of the inferior end of the sigmoid. Made several attempts necessary for a satisfactory exploration.

The treatment in the above case consisted briefly in the following:

1. Dilation of the constriction through the proctoscope by a wales bougie or a rubber dilator, devised and used by Dr. Hirschman, of Detroit, in giving rectal massage for the treatment of constipation.
2. Local applications to the parts, of astringents and antiseptics as indicated at each treatment. If I had but one remedy available, I would unhesitatingly use ichthyol, but I have had good results with the various silver preparations. Bismuth and the sulphocarbolates administered on an empty stomach have aided materially, especially when the disease was not confined to the sigmoid. Food should be nutritious, and must not be irritating as to quality and quantity. After two months' treatment the patient resumed his work, and has not lost one day since on account of illness. A recent communication informs me that he weighs two hundred, and enjoys his work.

Case 2. The following illustrates an acute case, and shows what can be done if the patient is properly treated during the early stage.

Dr. N., aged 45, a busy country practitioner, consulted me Feb. 18, 1907. Early in January of the same year, while attending a number of patients suffering from dysentery, found himself similarly affected. Cathartics, enemas, astringents and opiates gave him but temporary relief. He had lost twenty-five pounds in six weeks, and was totally incapacitated when I first saw him. Examination revealed a catarrhal condition of the rectum, and a constriction at the inferior end of the sigmoid admitting a number three bougie. The constriction was of a plastic nature, and with due precaution was dilated, at once allowing the passage of a number eight wales bougie. The sigmoid at once relieved itself of its burden. After introducing two ounces of a ten per cent. solution of ichthyol in olive oil, the doctor rested one hour and then enjoyed his dinner for the first time in six weeks. He resumed his work in one week and regained his weight in three weeks.

My experience in the treatment of these cases has been largely empirical, as but little creditable scientific work has been done in this field.

After two years' diligent search of the literature I am impressed with the theoretical rather than the practical phase of the treatment of this distressing condition. Many surgeons and internists have distinguished themselves by removing pebbles from the gall bladder, while not a few owe their existence as well as subsistence to the work done in the south-east corner of the abdomen.

Humboldt Building.

MEDICAL AND SURGICAL PROGRESS.

BRACHIAL BIRTH PALSY IN THE NEWBORN.

A REVIEW OF RECENT LITERATURE.

By HUGO EHRENFEST, M. D., St. Louis.

1. UEBER ENTBINDUNGSLAEHMUNGEN DER OBEREN EXTREMITAETEN BEIM KINDE.—Stransky (*Zentralbl. d. Grenzgeb. d. Med. u. Chir.*, 1902, No. 13).
2. UEBER ENTBINDUNGSLAEHMUNGEN.—Stolper (*Monatsch. f. Geb. u. Gyn.* Bd. XIV, p. 49).
3. THE PATHOGENESIS OF OBSTETRIC PARALYSIS.—Thoyer-Rozat (*L'Obstetrique*, September, 1904).
4. CLAVICULARFRAKTUREN NEUGEBORENER BEI GEBURT IN SCHAEDEL-LAGE.—Hauch (*Zentralbl. f. Gyn.*, 1905, No. 33, p. 1025).
5. OBSTETRIC PARALYSIS.—Bullard (*Am. Jour. of Med. Sciences*, July, 1907, p. 93).
6. BEITRAG ZUR FRAGE DER AETIOLOGIE DER ENTBINDUNGSLAEHMUNGEN DER OBEREN EXTREMITAETEN.—Eversmann (*Arch. f. Gyn.* Bd. 68, p. 142).
7. A STUDY OF BIRTH PALSY.—Clark, Prout, Taylor (*Am. Jour. of Med. Sci.*, October, 1905).
8. OBSTETRICAL PARALYSIS.—Thorburn (*Jour. of Obst. Brit. Emp.*, May, 1903, p. 454).
9. DIAGNOSE SYPHILITISCHER EXTREMITAETSLAEHMUNGEN BEI NEUGEBORENEN.—Lewin (Rev. in *Muenchn. Med. Woch.*, 1902, No. 18, p. 761).
10. Kennedy (*Brit. Med. Jl.*, February 7, 1903, p. 298).
11. RESULTS FROM THE SURGICAL TREATMENT OF BRACHIAL BIRTH PALSY.—Taylor (*Jour. Am. Med. Assn.*, Jan. 12, 1907, p. 96).

Statistics quoted in many of the modern textbooks of obstetrics place the frequency of brachial birth palsy as approximately one case in 2000 deliveries. Of late, quite generally, the belief is gaining ground that this percentage is too low, because this figure undoubtedly is based upon statistics made in maternity hospitals in which, as a rule, all cases are handled by skilled men, and this factor, as will be shown, materially reduces the number of palsies. But there are many other reasons which preclude the collection of exact statistics. Stillborn babies, obviously, must be excluded from the calculations; light forms of palsy are very often overlooked, and certainly very often not recorded because they recovered promptly. There can not be any doubt that in many of these cases a false diagnosis of fracture or dislocation is made, or a dislocation mistaken for a palsy. Indeed, only of late, with the more general use of the x ray for diagnostic purposes, has it been possible to make a positive diagnosis in obscure cases. It is certainly a noteworthy fact that simultaneously with the improvement in our diagnostic methods and of

our knowledge concerning the etiology of this disease, the belief is steadily growing that brachial birth palsy, while not as common as facial palsy, is a condition not by any means rare in the newborn.

The increased interest in this unfortunate birth injury, manifest in the great number of important contributions on the subject, has evolved two very practical results; firstly, the successful repair of the injury by operation in certain cases, and, secondly, the recognition of the fact that this palsy, in the large majority of cases, is due to improper manipulations on the part of midwife or physician during delivery. That such manipulations might be responsible for this paralysis was suspected for a long time, and finally practically proved so by Prouff and Guillemot (*Ann. de Gyn.*, January, 1897), who reported an *endemie* of thirty cases of brachial palsy in the practice of a single midwife. The appreciation of this fact lead to investigations concerning the cause of this condition and as a result of this labor many theories were advanced. Most of these are detailed in the two very exhaustive papers on this subject which have recently appeared: a collective abstract of Stransky (1), including 90 articles and quoting the histories of 94 cases recorded in literature up to 1902, and a paper of Stolper (2) in which he describes his own investigations and experiments.

From the latter paper I shall quote some interesting data concerning the gradual evolution of our present views regarding the etiology of brachial palsy.

The first casuistic report of a case of brachial birth palsy was published by Danyan in 1851. A still earlier report of a bilateral brachial paralysis by Smellie is too inaccurate for scientific consideration. The first exact description of this condition was furnished by Duchenne in 1871. He, however, limited his observations to prognosis and therapy, making no reference to etiology. Seeligmueller, in 1874, said the forceps could cause paralysis not only of the facial but also of other nerves,—thus by pressure of this instrument against the brachial plexus a paralysis of the upper extremity could be produced. He called attention to the fact that this form of palsy is more common in breech presentation when strong traction or pressure is exerted against the shoulders. Erb's classic paper, which also appeared in 1874, is based upon observations of brachial palsies in the adult. He found as a cause of the symptom complex, a lesion of the fifth and six cervical nerves, and discovered a spot above the clavicle from which contractions in the paralyzed muscles could be produced by the application of the electrode. It is worthy of mention that in adult patients, contrary to the common findings in the newborn, the *M. infraspinatus*, and the *suprascapularis*, is only rarely found affected. F. Schultze (*Arch. f. Gyn.* Bd. 32, p. 410) in describing a case, supported Erb's theory, and attempted to prove that the lesion is produced by the pressure exerted upon Erb's point by the clavicle when the shoulder is forcibly elevated and the arm thrown upwards and backwards. In his opinion a strong curve of the clavicle and a lack of adipose tissue favor the development of the paralysis.

The next contributor to the question is Thorburn (1886). He observed a paralysis of the left arm, complicated by a ptosis and miosis of the left eye, the child having been extracted with forceps. He explained the symptom complex as due to a trauma of the sixth cervical and first dorsal nerves above the *rami communicantes* which lead to the sympatheticus. In his opinion, the injury is not a simple compression, but an actual tearing of the nerves, the result of hyperextension of the shoulder. Chronologically a paper of Burr, not quoted by Stolper, pub-

lished in 1892, must here be mentioned. Burr advanced the theory, which to-day must be regarded as obsolete, that the palsy is due to an injury of the spinal cord.

Fieux, in 1897 (*Ann. de Gyn. et Obst.*, January), although corroborating Erb's theory concerning the etiology of Duchenne's palsy, refused to accept the idea that the trauma to the plexus was caused by pressure against Erb's point, exerted directly by the blade of the forceps, the clavicle, or the finger of the obstetrician. He holds that the injury consists of a rupture of the fifth and sixth cervical nerves, the result of overstretching. In this Fieux agrees with Thorburn, but he offers a different explanation of the immediate cause of the lesion. If traction is made not in an axial direction, but with the head inclined toward one shoulder (what he terms *tractions asynclitiques*) these nerves are over-stretched and partially or completely torn. Only in this manner, in Fieux's opinion can isolated paralysis of the deltoid be explained; but, of course, one must remember, as has been pointed out by Bollenhagen, that in adult cases, even of typical Duchenne palsy, the functions may have been restored in all the affected muscles except the deltoid.

In 1899 Shoemaker (*Zeitsch. f. Geb. u. Gyn.*, Bd 41) repeated the experiments of Fieux and confirms his conclusions. He thinks, however, that in some cases the typical picture of a Duchenne palsy is produced by simple compression of the nerves by the finger, in Mauriceau's grip in breech cases; by the blade of the forceps, or by the clavicle when traction is exerted on the born head. During forceps extraction this unfortunate complication is more likely to occur if, in occipital presentation, the head is too forcibly flexed; or, in face presentation, if it is too strongly deflexed, especially if at the same time the handles of the instrument are pulled in a direction which forms an angle with the axis of the fetal body.

Kuestner's statements in Mueller's *Handbuch der Geburtshilfe*, for some time influenced the opinion of many writers, but to-day they are irrelevant in view of the radiographic methods of diagnosis, and as the result of the advanced knowledge regarding the etiology of brachial palsy. Kuestner did not deny the possibility of a true brachial palsy due to an isolated injury to the nerve plexus, but was inclined to believe that in the overwhelming majority of these cases the actual cause of the palsy was due to a fracture or dislocation near the shoulder. In vain he tried to explain to himself why facial palsies heal so readily, and the brachial palsies prove so refractory to all kind of treatment, indeed remain permanently unrelieved in a striking percentage of cases. "In the case of the facial paralysis it is always hard steel; in the brachial cases, as a rule, the soft finger of the obstetrician which exerts the injurious pressure against the nerve." Thus he seemed forced to his conclusion that in all serious cases, with a more or less permanent destruction or impairment of function, the trauma to the plexus had been complicated by an unrecognized injury to the humerus or a dislocation.

Stolper (2) observed a typical Duchenne palsy subsequent to the forceps extraction of the fourth child of a woman, whose second child, after a spontaneous, delivery, had shown the same condition. After having studied most carefully the entire literature on the subject and repeated the various experiments made by preceding investigators on the cadaver, he was able to confirm some of the older theories and to prove the fallacy of others. He formulates his own opinion in the following deductions: (1) Direct pressure of the forceps can lead to brachial palsy only in cases of deflexed head presentation, if the deflexion is not

recognized or the forceps is not applied in accord with the rules for the deflexed head. (2) Direct pressure of the clavicle may cause paralysis if the arm and with it the clavicle is forcibly pulled upwards and backwards. This condition will arise only during the extraction of breech cases or after version, usually in connection with difficulty in freeing the arm. (3) In cases of head presentation the fifth and sixth cervical nerves may be stretched severely, but never actually torn (as is claimed by Fieux!) in an attempt to pull excessively broad shoulders through the pelvic outlet. This is more likely to occur if the head during the extraction is strongly bent laterally, the palsy then appearing on the other side. It is obvious that a small pelvis or abnormally broad shoulders, as *c. g.*, is stated by Oppenheim (*Lehrbuch der Nervenheilk*, 1898, p. 319), will more often necessitate such a forcible extraction. It is probable that this explains the occurrence of a brachial palsy in two infants of the same mother as in Stolper's case. (4) Hard pulling in cases of deflexed head presentation favors the development of palsy, and, therefore, Stolper advises to avoid carefully both further deflexion and lateral flexion, if difficulty with the shoulders demands traction on the born head. (5) It is obvious that nerve injuries may be caused by fractures or dislocations near the shoulder.

In an interesting article Thoyer-Rozat (3) state that to-day it is almost generally accepted that, in accord with Fieux's findings, the elongation and rupture of the roots of the brachial plexus, not simply their compression, are the cause of the brachial palsy. They admit the etiologic importance of asynclitic tractions made in the attempt to free the anterior shoulder from the pubic arch. These writers, however, observed a paralysis produced under conditions which, in their belief, precluded all possibility of elongation or indirect rupture of the roots of the plexus. There was difficulty in the birth of the shoulders. The anterior shoulder became impacted behind the symphysis. The posterior shoulder being more accessible, its arm was disengaged first and brought down. The anterior arm, however, was the one paralyzed, and in this case direct pressure of a finger against Erb's point on the anterior shoulder most probably produced the palsy. For the obstetrician the rule must be derived, to beware of unnecessary asynclitic tractions in cases of impacted shoulders, and at the same time to remember Budin's precept, to carefully avoid pressure on Erb's point.

The conclusions of Stolper's very valuable paper fairly represent the modern views concerning the mechanical cause of brachial palsy. Improper traction on the born head undoubtedly may prove detrimental to the infant; and it seems appropriate to mention in this connection a paper of Hauch (4) in which it is shown that these same asynclitic tractions also may cause fracture of the anterior clavicle lying behind the symphysis.

The common view, especially of neurologists, that brachial palsy is practically limited to cases of breech presentation and instrumental delivery, is untenable. Bullard (5) has investigated a considerable number of cases in the Department of Nervous Diseases at the Children's Hospital at Boston, by sending a request to the attendant physician asking for an account of the delivery and labor. In this manner reports have been obtained of 43 cases. Forceps was used in 28 cases. The head presented in 40 cases, the breech in 3, which certainly represents a strikingly small percentage of breech cases. In 18 cases it was especially noted that the shoulders were held or offered resistance to extraction. On the other hand, it was expressly recorded in 5 cases that the shoulders were not held.

A rather novel suggestion relating to the etiology of brachial palsy is contained in Stransky's paper (1). He lays stress upon the fact that a very large number of these babies undoubtedly are born in an asphyxiated condition. Referring to the generally accepted fact that circulatory disturbances together with toxic conditions play an important rôle in the causation of certain palsies as observed, *e. g.*, in alcoholics, or after a general anesthesia, etc., he suggests that possibly the increased vascosity and thus abnormal toxicity of the blood of the asphyxiated newborn, may stand in some relation to birth palsy.

Reference has already been made to the existing dissensus of opinion concerning the exact nature of the injury to the plexus. While Fieux and many others assume an actual tearing of the roots of certain nerves, Stolper and a few insist upon their claim that the injury is limited to the effects of a strong compression. Several recent contributions strengthen the theory of an actual interruption in the continuity of the affected nerves.

In a case of Eversmann (6) a left sided Duchenne palsy developed in a baby extracted after version. Two and one-half months later the baby died with the symptoms of the paralysis unchanged. At the post mortem examination a small tumor was found occupying the fifth cervical nerve, where it received the fibres of the sixth nerve, the tumor including the phrenicus. Microscopic examination established the fact that this tumor was a fibrous callus formed in place of a complete tear of that portion of the nerve.

Clark, Prout and Taylor (7), who operated on a number of these cases and thus gained material for histologic investigations, divided the lesions into immediate and remote. The immediate lesion consists in a tearing of the perineural sheath surrounding and supporting the nerve trunk and the incidental rupture of bloodvessels belonging to it. There is, furthermore, a severance of the nerve strands, more or less complete, depending upon the severity of the case. The remote result is brought about and its extent determined by (a) the healing of the perineural sheath, (b) the organization of the blood clot, and (c) the ultimate contraction of the cicatrix upon the nerve strands, which not only prevents their regeneration but determines a pressure neuritis in those not severed and upon which it may chance to impinge. When pressure alone is the cause of the palsy, there is little pain and spontaneous recovery ensues within a year. When, however, the infant is peevish and irritable, showing signs of pain, tearing has taken place and spontaneous recovery rarely follows.

The character and extent of the injury obviously determines the symptoms in the particular case. Stransky describes the typical picture of a brachial birth palsy as follows: The muscles almost always affected are the deltoides, biceps, brachialis internus, infraspinatus and the supinators, quite frequently involved are latissimus dorsi, teretes and trapezius inferior. The muscles chiefly affected are those supplied by the fifth cervical nerve, to a smaller extent, those controlled by the sixth cervical. In about 13 per cent. of the cases the paralysis is limited to the forearm, implying the muscles of the hand and fingers. In these cases, without exception, oculo-pupillary symptoms (ptosis and miosis, the narrowed pupil, however, reacting promptly to light) are present due to the fact that in these cases the injury extends to the root of the first dorsal nerve which contains the roots of the corresponding sympathetic branch. In contradistinction to lesions of the upper portion of the plexus in these cases the reduction or complete absence of sensibility in the forearm is well

pronounced. In a number of instances the palsy has been seen accompanied by a facial paralysis of the same side.

According to Thorburn (8), in the common form—the Erb-Duchenne type—we deal with a paralysis with loss of faradic reaction and subsequently atrophy of biceps, brachialis anticus, deltoideus, long and short supinators, teres minor, supra- and infraspinatus. In such cases the shoulder is flaccid, while we find retraction of the eyeball and miosis upon the affected side, from injury to the *rami communicantes* which leave the last cervical and first dorsal roots to join the cervical sympathetic, and thence to pass to the *dilator iridis* and the muscle of Mueller.

Anesthetic areas are not often detected in these cases. In infants anesthesia would readily escape observation, and even in paralysis of the entire plexus it may be difficult to ascertain whether it is or is not present.

As to differential diagnosis, Stransky mentions the following conditions which may produce similar symptoms: Obstetric lesions of the spinal cord, meningeal hemorrhages or other cerebral injuries, and acute infantile poliomyelitis.

From a differential diagnostic point of view, peculiar palsies of the upper extremities are noteworthy which occur in heredo-syphilitic children. Lewin (9) emphasizes the fact that for these cases a peculiar position of the extremities, resembling the fins of a fish (*Flossenstellung*) is absolutely characteristic. The hand is in extreme pronation, its palm looking outwards and backwards, the carpal joint being flexed to a right angle, while the hand is abducted and forms a blunt angle with the ulna.

The treatment of obstetric paralysis of the arm has until recently consisted solely in the use of warmth, massage, galvanism and the like. Thorburn (8) suggested in 1886, arthrodesis at the elbow for certain cases, but in 1905, when he published the paper already quoted, he did not think that this suggestion ever had been carried out. He gives the following data concerning the gradual development of the present surgical methods of treatment of brachial palsy: In a case of rupture of the plexus, due to attempted reduction of a dislocation of the humerus, Wallis (*Trans. Clin. Soc. London*, 1898) successfully resected a mass of nerve callus involving the roots of the plexus. Tuffier performed a similar operation in 1899. Two years previously in a case of complete rupture Thorburn himself had removed, with partial success, a mass of callus involving the entire plexus (*Brit. Med. Jl.*, May 5, 1900). Oppenheimer quotes a case sutured by Lesser. Kennedy (*Glasgow Med. Jl.*, October, 1900), also performed successfully the operation of callus resection with secondary suture. There are numerous cases on record of primary suture of the injured brachial plexus.

Kennedy (10) has extended the operation to obstetric paralysis and has reported three cases in all of which the cicatrix was situated at the junction of the fifth and sixth cervical nerves. Kennedy suggests two months after birth as a reasonable period to wait for spontaneous recovery.

Clark, Prout and Taylor, in the article already mentioned, express the opinion that the nature of the lesion in all cases demands excision of the damaged area and stuture of the divided ends as soon as it is proved that spontaneous repair will not take place. The proper time for surgical interference can not yet be definitely stated. It appears, however, to be much later than two or three months after birth, as advised by Kennedy. At the present time one year would seem a reasonable delay before operation.

In a very interesting paper Taylor (11) deals with the results so far obtained with the surgical treatment of brachial birth palsy. His conclusions are based upon observations made on nine patients. As the immediate result of the operation, in seven cases, an increased area of paralysis appeared, due to the necessity of dividing some normal nerve fibers in excising the cicatricial tissue. In all cases the power lost through operation has been regained. As far as remote results are concerned, improvement in the nutrition of the limb is one of the first signs of regeneration in the sutured nerves. It is evidenced by the appearance of more natural warmth and color. This change usually begins about the end of the fourth month. The return of power in the muscles paralyzed by the operation is usually rapid and may be completed in from six to eight months. The return of function in the previously paralyzed muscles appears in from six to ten months. Systematic after treatment (massage, electricity, passive motion, etc.) is very necessary in order to prepare good mechanical conditions for the exercise of nerve power when regeneration occurs. These same means must be employed from a period shortly after birth till either spontaneous cure occurs or operation seems indicated.

LABORATORY METHODS IN THE DIAGNOSIS OF PANCREATIC DISEASE.

A REVIEW OF RECENT LITERATURE.

By ALBERT E. TAUSSIG, M. D.

1. THE PANCREAS, ITS SURGERY AND PATHOLOGY.—Mayo Robson and Cammidge, 1907.
2. THE NUCLEUS TEST IN PANCREATIC DISEASE.—Steele (*Trans. Assn. Am. Phys.*, 1906, p. 347).
3. NOTE ON DIAGNOSIS OF PANCREATIC DISEASE WITH SPECIAL REFERENCE TO LABORATORY METHODS.—Musser, Steele and Fife (*Ibid.*, p. 359).
4. UEBER DIE UNTERSUCHUNG DES PANKREASSAFTES BEIM MENSCHEN, ETC.—Volhard (*Muench. med. Wochenschr.*, 1907, p. 403).
5. CHRONIC PANCREATITIS.—Deaver (*J. A. M. A.*, 1908, p. 374).
6. DIE IN DEN LETZTEN 10 JAHREN IN DER HEIDELBERGER CHIRURGISCHEN KLINIK BEOBACHTETEN FAELE VON PANKREASERKRANKUNGEN, ETC.—Eloesser (*Mitt. a. d. Grenzg. d. Med. u. Chir.*, 1907, p. 195).
7. UEBER EINE EINFACHE METHODE ZUR PRUEFUNG DER PANKREAS-FUNKTION BEIM GESUNDEN UND KRANKEN MENSCHEN.—Schlecht (*Muench. med. Wochenschr.*, 1908, p. 725).
8. EXPERIMENTELLE BEITRAEGE ZUR DIAGNOSE DER PANKREASERKRANKUNGEN.—Eichler (*Berl. kl. Wochenschr.*, 1907, p. 769).
9. UEBER DAS VERHALTEN DES PROTEOLYTISCHEN LEUCOCYTENFERMENTES, ETC.—Mueller (*Arch. f. klin. Med.*, 1908, p. 199).

Successful surgical interference in pancreatic disease is a matter of very recent development. This is not because of any special difficulty of technique but because it is only of late that early and accurate diagnosis of pancreatic affections has been possible. The physical signs alone, while suggestive, are rarely decisive. Tumor, fever, pain and tenderness, pressure symptoms, hemophilia, jaundice and emaciation may any or all of them be due to other causes. In pancreatic disease, if ever, the surgeon or internist must look for aid to the laboratory worker. Moreover, the routine office examinations rarely suffice. The work must be done by someone with special training if the results are to be trustworthy. Numberless laboratory tests have been suggested for this purpose, though not many have turned out to be of real diagnostic importance. It is the purpose of this article to take up very briefly a few of the most important.

Blood. The blood changes that result from pancreatic disease have not as yet received much attention from investigators, but that they are important and interesting is shown by the profound alterations both morphological and chemical that are met with in serious and advanced lesions and to a less extent in milder types of the disease. The hemorrhagic tendency in pancreatitis has already been mentioned. Estimations of the coagulation time of the blood, made by Cammidge (1) with Wright's method have shown that it may be prolonged in pancreatic disease considerably longer than can readily be explained from

the jaundice that is usually present. The blood picture, too, shows definite changes. In advanced cases there is always a marked anemia, which, however, is characterized rather by a low count than by a great diminution of the hemoglobin, so that the hemoglobin index is high. Leucocytosis may be present or absent. The blood changes, thus, while not characteristic, are suggestive.

Stomach Contents. In pancreatic cancer, the stomach contents usually contain no free hydrochloric acid. Since, however, cancerous conditions elsewhere produce the same phenomenon, this is of importance only if the diagnosis of pancreatic disease can be established by other means. Volhard's test (4), however, is interesting and has a decided, if negative, value. It is based on the fact that the duodenal fluid flows back into the stomach when a large amount of oil or very acid liquid is ingested. He introduces into the stomach about 200 c.c. of olive oil. Fifteen minutes later he aspirates about 100 c.c. of stomach content and, after pouring off the supernatant oil, examines the fluid for trypsin. This can readily be done by adding a few drops to a little milk, rendering the whole slightly alkaline and placing it in the incubator. The clear fluid above the precipitated casein gives the biuret reaction if trypsin is present. While not pathognomonic the absence of trypsin speaks for, and its presence against, pancreatic disease.

Stool. The stools in pancreatic disease are among its most characteristic features. They are exceedingly bulky, soft, greasy and pale. They contain undigested fat and muscle fibre and are extremely offensive. Patients frequently state that they suffer from diarrhoea, but this is usually an error for, although the stools are bulky and soft, they are not liquid in consistency. Such stools are very suggestive of pancreatic disease and Musser (3) for instance is apparently inclined to lay as much stress upon their macroscopic appearance as upon their microscopic and chemical examination. Often, however, similar fatty stools are found in biliary obstruction due to gall-stones, catarrhal jaundice and other hepatic diseases. Some years ago, however, Friedrich Mueller proposed a test consisting in a determination of the degree to which fat is split in the intestine and this method has been carefully worked out and simplified by Cammidge (1). It is based upon the theory that while both bile and pancreatic juice are essential to the proper digestion of meat-fat, the pancreatic fluid alone is responsible for splitting the fat into glycerine and fatty acid while the bile is indispensable for its saponification and absorption. If, therefore, a fatty stool consists chiefly of neutral fat, there is interference with pancreatic function; if chiefly of fatty acids, the pancreatic juice is secreted normally. Cammidge has made careful analyses of the feces in 100 cases of suspected pancreatic disease, many of which came to operation or autopsy, and has found the test to hold true with sufficient regularity to make it extremely valuable for diagnosis. Others are not so sanguine, though apparently none of them have as extensive an experience with the method as Cammidge. Brugsch believes that the presence of bile is necessary to enable the pancreas to split fat and a number of American clinicians (3) seem to have made observations in cases of pancreatic disease tending to substantiate this view.

In a paper read before the Congress for Internal Medicine in 1904, Adolph Schmidt suggested a new method of diagnosis in pancreatic disease, the so-called "nucleus test." He first demonstrated in artificial digestion experiments outside the body that the cell nuclei are digested by the secretion of the pancreas alone and are not affected by the other

digestive ferments. He then devised the method of passing small pieces of meat through the gastro-intestinal tract and examining them for nuclei after their recovery in the stool, in order to determine the activity of the pancreas. In dogs, the test worked out very well. In healthy dogs, the fragments of meat, recovered from the stool, showed complete digestion of the nuclei; in dogs deprived of their pancreas, the nuclei remained intact. In two cases of pancreatic destruction in human beings the nuclei were not digested; in 100 individuals free from pancreatic disease, the nuclei were completely destroyed. Clinically the test is done as follows: Bits of beef, the size of a pea, are hardened in alcohol for a few days, then tied up in a little bag of Brussels net and kept in alcohol until used. They are given with the noon meal and laxatives are administered if necessary to ensure their recovery next morning. If they are retained in the bowel over 18 hours, the nuclei may be destroyed by putrefactive changes. A diarrhoea, on the other hand, may hurry them through before the pancreatic juice has had time to act. This naturally limits the utility of the test. Steele (2) believes it of some value though he thinks that the nuclei may persist as a result of a general lowering of all digestive power without special disease of the pancreas. Cammidge is even more skeptical. The test has probably only confirmatory value.

Eduard Mueller (9) has shown that it is possible by means of Loeffler's blood serum to demonstrate the presence of trypsin in the stool. A little of the latter is rubbed up with glycerine, a few drops of the extract are placed on plates of the ordinary Loeffler-serum and incubated for 24 hours at a temperature of 55-60 degrees centigrade. At this temperature neither bacteria nor the other digestive ferments affect the culture medium. Pancreatic trypsin however digests the serum with the formation of a depression in the plate. In 200 individuals he nearly always found trypsin in the stool, in traces under ordinary circumstances, in larger quantities if there was diarrhoea. This, doubtless, because in the latter case there was less time for the reabsorption of the pancreatic juice in the colon. Schlecht (7) has worked out the method clinically. The patients, after a thorough rectal lavage receive 0.3 gram (gr. v) calomel. A few drops of the resulting stool are placed upon Loeffler plates and incubated at 50-60 degrees C. In the absence of pancreatic disease, the culture medium begins to undergo digestion in an hour or two, while in 24 hours deep holes have usually been eaten into the plates. In a number of cases of pancreatic disease, on the other hand, the stools were found free from trypsin. The test seems to have merit but requires clinical confirmation. It would obviously give information only in cases of entire destruction of the pancreas or complete obstruction of its duct.

Urine. The occasional occurrence of glycosuria in pancreatic disease need only be mentioned. In itself it is not especially significant but where the clinical and chemical picture suggests pancreatic disease, the occurrence of sugar in the urine may serve to clinch the diagnosis. In this connection the occurrence of alimentary glycosuria has diagnostic importance. If 100 grams of grape sugar be administered early in the morning, the urine passed during the forenoon will not contain sugar if the individual be in perfect health. In pancreatic affections a glycosuria will, however, usually occur.

The occurrence of the so-called "Cammidge Test" in the urine of pancreatic disease has been the subject of much discussion during the past few years. It is based on the theory that the urine, under these conditions, contains a substance which when boiled with hydrochloric acid splits off

a carbohydrate, possibly a pentose, that produces a typical crystalline osazone when treated in a rather complicated fashion with phenylhydrazin. There are two modifications of the test, one of which it is claimed is characteristic of pancreatic cancer, the other of pancreatitis. Both tests have been discussed in detail in these columns. Cammidge himself, however, admits that these tests are difficult and somewhat uncertain and has recently brought forward a third modification, the so-called "C-reaction." In this, Cammidge says, the "manipulation is slightly more complicated and still requires a reasonable amount of skill and care, particularly in the details of the experiment, but the result is an absolute one, and is therefore independent of the personal bias of the investigator" * * * * In performing the reaction, a specimen of the 24 hours urine or of the mixed evening and morning secretions is filtered several times through the same filter paper. If it is found to be free from sugar and albumen and is acid in reaction, 2 c.c. of strong hydrochloric acid (sp. gr. 1.16) are mixed with 40 c.c. of the clear filtrate and the mixture gently boiled on a sand bath in a small flask fitted with a funnel condenser. After 10 minutes boiling, the flask is well cooled in a stream of water, and the contents made up to 40 c.c. with cold distilled water. The excess of acid is then neutralized by slowly adding 8 grams of lead carbonate. After standing for a few minutes to allow of the completion of the reaction, the flask is again cooled in running water, and the contents filtered through a well moistened, close grained filter paper until a perfectly clear filtrate is obtained. The acid filtrate is then well shaken with 8 grams of powdered tribasic lead acetate, and the resulting precipitate removed by filtration, as clear a filtrate as possible being secured by repeating the filtration several times if necessary. Since the large amount of lead now in solution would interfere with the subsequent steps of the experiment, it is removed, either by a stream of sulphuretted hydrogen or, what we have found to be equally satisfactory and less disagreeable, by precipitating the lead as a sulphate. For this purpose the filtrate is well shaken with 4 grams of powdered sodium sulphate, the mixture heated to the boiling point, then cooled to as low a temperature as possible in a stream of cold water, and the white precipitate removed by a careful filtration. Ten c.c. of the perfectly clear, transparent filtrate are taken and made up to 17 c.c. with distilled water; it is then added to 0.8 gram of phenylhydrazin hydrochlorate, 2 grams of sodium acetate, and 1 c.c. of 50 per cent. acetic acid, contained in a small flask fitted with a funnel condenser. The mixture is boiled on a sand bath for 10 minutes and filtered hot through a small filter paper, moistened with hot water, into a test-tube provided with a 15 c.c. mark. Should the filtrate fall short of 15 c.c., it is made up to that amount with hot distilled water, the added water being well mixed with the fluid by stirring with a glass rod * * * * In well marked cases of pancreatic inflammation a light yellow, flocculent precipitate should appear in a few hours, but in less characteristic cases it may be necessary to leave the preparation over night before a deposit occurs. Under the microscope the precipitate is seen to consist of long, light-yellow, flexible, hair-like crystals arranged in delicate sheaves, which when irrigated with 33 per cent. sulphuric acid melt away and disappear in 10 to 15 seconds after the acid first touches them." It has seemed necessary to state the method in Cammidge's own words and *in extenso* as the details are all-important, but a little consideration will show that the procedure itself is less complicated than its description.

Cammidge himself has found this test so reliable as to fall only just short of being pathognomonic. In 67 cases of pancreatitis the reaction

was always positive. In 16 cases of pancreatic cancer it was negative 4 times. In 117 cases of other diseases it was negative 113 times, while in the urine from 50 healthy individuals it was always negative. Eichler (8) has tested the reaction experimentally in dogs and found it always negative in health and always positive in artificially produced pancreatic disease. Clinicians have not, however, been unanimous in its praise. Oddly enough, the surgeons as a class view the test with favor, some of them with enthusiasm, while the internists are much more skeptical. Mayo Robson (1), Deaver (5), Wm. Mayo, Eloesser (6) and others report good results with the method, while Musser (3), Barker and Steele are disinclined to admit its value. Most of these, however, have worked only with the earlier modifications. Except in Cammidge's hands the improved "C-reaction" has not yet been extensively tested in clinical work.

To sum up then, in pancreatic disease, as in other obscure affections, a diagnosis is usually possible only by utilizing all the diagnostic means at our disposal. Close clinical observation is indispensable, but the aid of the laboratory, too, must almost always be called in. Blood examinations are of doubtful value. The analysis of the fatty stools and the "nucleus test" are useful but not always free from sources of error. The demonstration of trypsin in stomach contents and stool have a negative value in that they prove the pancreas functioning and the pancreatic and common ducts patent. Diabetes mellitus or alimentary glycosuria, when present, may serve to clinch the diagnosis. The Cammidge tests are still on trial, but while the A and B modifications seem open to valid objections, the improved C-reaction is apparently indispensable for the diagnosis of obscure pancreatic affections.

EXPERIMENTAL LUNG SURGERY.

A REVIEW OF RECENT LITERATURE.

By M. B. CLOPTON, M. D.

1. THE OPENING OF THE PLEURAL CAVITY WITHOUT PNEUMOTHORAX.—Tuffier (*International Clinics*, 1907, 17, p. 138).
2. EXPERIMENTAL STUDIES IN LUNG AND PLEURAL SURGERY.—Tiegel (*Mitt. a. d. Grenzgebieten Med. u. Chir.*, Gedenkband f. Mikulicz, p. 789).
3. THE PHYSIOLOGICAL PRINCIPLES AND THE USEFULNESS OF OVER-PRESSURE TO PREVENT PNEUMOTHORAX.—Seidel (*Mitt. a. d. Grenzgebieten Med. u. Chir.*, 1907, Vol. 17, No. 5, p. 184).
4. EXPERIMENTAL SURGERY OF THE LUNG.—Robinson (*Annals of Surgery*, 1908, Vol. XLVII, No. 2, p. 184).
5. THE SURGERY OF THE LUNG.—Friedrich (*Arch. f. Klin. Chir.*, Vol. LXXXII, No. 4, p. 1147).

The new era of lung surgery opened with the impetus of the researches of Sauerbruch, in 1904, which were later followed and opposed in principle by Brauer. These studies had for their object the avoidance of the respiratory and blood pressure risks due to opening of the pleural cavity with the consequent collapse of the exposed lung. To overcome this collapse Tuffier and Hallion, in 1896, had suggested a plan by which they could regulate at will the volume of the lung subjected to artificial respiration after simultaneous openings of both plueræ. This they did by the use of a tracheal tube passed through the mouth fitted with a François Franck canula, through which chloroform was administered after passing through a set of valves which allowed an increase of pressure in the lung. While this was not used for any thoracic operation at that time, much the same principle was subsequently adopted by Brauer. Sauerbruch makes use of an operating room or chamber in which the body of the patient is surrounded by a reduced pressure, the head remaining outside in an atmosphere of normal pressure. Brauer, on the other hand, has the thorax at normal pressure, but the anesthetic is given with the head in a small chamber in which there is an increased pressure, which prevents the lung collapse. The experimental work essential to the satisfactory solution of this question has been abundantly reported, so that abstracts of the more recent work give more of final opinions. The great difficulty of asepsis and care of the animals, about counter-balances the depression of the diseased humans, so that the knowledge gained upon lower animals can well be applied to the pathological conditions in man. The first abstract is given quite full, because in most instances many details are the same with all the experimenters, and are given once for all.

Tiegel used Sauerbruch's decreased pressure chamber for his experiments, as he believes that for long and radical operations on man it is physiologically more perfect and also less liable to accident. The negative pressure is maintained at from 10 to 14 mg. Ether preceded by morphine is the anesthetic, and the animal must be deeply under before the thorax is opened, to avoid the reflex that comes when the costal pleura is touched or a large bronchus incised. Occasional death occurs in large

healthy dogs from acute dilation of the right ventricle, assignable to the increased intrapulmonary pressure. The thorax is opened by a long intercostal incision without rib excision, the elasticity of the cartilages allowing extensive spreading of the ribs where they are held by a fixed retractor. A flap is made of the thoracic muscles which is laid back, and later it is sutured in place, after the pleura has been carefully closed and the ribs lashed together by two or three heavy silk sutures. The same incision is possible in man, except in old people whose cartilages are calcified, when resection of the ribs is resorted to. Plastic operations upon the lung must be done without the aid of deep fixation sutures as they tear through the friable and ever moving tissue, but repair of a defect must be done with a tongue of the lung tissue which closes the defect and is held in place by superficial stitches, which are put in after the surface of the cut has been wiped over with Lugol's solution, which aids the sealing and strength of the plastic closure. Plastic operations are applied to all large wounds in which a bronchus is wounded, or after a foreign body has been removed where no sepsis is feared. If a plastic operation cannot be made, it is sufficient to wipe the raw place with Lugol's solution. Local anemia is obtained either by digital compression, or by using long stomach clamps. The clamping is well borne by the lung, provided it is not too tightly squeezed. Small injuries are not followed by pneumothorax, but are sealed by blood and fibrin. A solution of chloride of iron also seals the alveoli and small bronchi, better even than the Paquelin cautery, and for large wounds these chemical methods must be used as aids. Large vessels and bronchi must be ligated and the wound closed air tight, otherwise pneumothorax follows, which later becomes infected. The pleural suture is best made by running along both sides of the wound just beneath the pleura stitches of heavy cat gut or magnesium, and closing the wound by interrupted stitches that include this lateral stitch. The stitches may be soaked in turpentine, Lugol's solution, or stypticin, to seal the puncture holes. Experiments and clinical observation teach us that large parts of the lung can be resected without respiratory changes. A clamp is used and the lung divided with a knife. A lobe can easily be extirpated if no adhesions are present, by clamping and dividing at the hilus, but if there are pleural adhesions, experimental or otherwise, it is dangerous to free these before dividing the root of lung because of the severe hemorrhage. Catgut must not be used because it is absorbed and the bronchus opens. The ligation of the bronchus is always followed by necrosis if only one ligature is used. It is best to have the stump closed by lightly ligating the mass with silk, including the surrounding tissue and vessels which act as a cushion, then peripheral to this is placed a tight ligature and then the remains of the lung structure are sutured over the stumps.

Resection of the lobe is attended by the danger of (1) reflex effects from ligation of the root of the lung, which is most important; (2) loss of air space for respiration, but experimentally it is possible at times to extirpate a whole lung; (3) disturbance of the lesser circulation; (4) imperfect management of the stump, with subsequent pneumothorax. The most critical moment is when the distending lung is removed and the change comes in the lesser circulation due to the cutting down of its size, when the extra load is thrown on the other vessels and capillaries, and at the time of the displacement of the mediastinum. Another danger is the loosening of the thrombi from the stump, causing death from embolus of the other lung. When the lung is excised in whole or in part, to maintain the circulation and to prevent displacement of the mediastinum

and to relieve dyspnoea, it is well to fill the pleura with salt solution before closing the wound.

Foreign bodies in the lung are often beyond the reach of Killian's bronchoscope, and the lung has to be opened to remove them, or an abscess will follow. If they are attacked early, before the infection, using a Sauerbruch chamber, they can be identified by palpation if they are near the surface. To locate them a bronchoscope may aid, or in case of metallic substances, the x ray is of value. If the foreign body is in a principal bronchus, or its immediate vicinity, it can be attacked through the fifth interspace behind, near the spine. The wound of the bronchus, after removing the object, is closed with Lembert sutures of silk, and the stitches must not penetrate the mucosa. A lip of lung is tied over the bronchial wound with the ends of the suture threads.

In abscess of the lung 83 per cent. are followed by infection of the pleura, and 13 per cent. are not. In the latter class the chances for operation are best. The two stage operations, where the lung is sutured to the pleura or held by adhesions after irritants, are uncertain. With the lessened pressure cabinet the chest is opened and the lung surface rubbed with gauze and then with Lugol's solution over the area of the abscess, then tightly stitched in place. After a day the chest wall is again opened under lowered pressure and the pressure is gradually brought to normal in the cabinet to see if the adhesions hold. If not a further delay is allowed, but if they hold, the lung is opened with a blunt needle after the pressure is again lowered.

The suggestion for the handling of empyema in the Sauerbruch room is to open the pleura, break down all adhesions, flush with salt solution, at the same time slightly increasing the pressure of the room, but before closing the wound with air-tight bandages without drainage, reduce the pressure to 10 m. g. Dressing should also be done in the chamber.

Pneumothorax is quite frequent and, if of a moderate grade, is usually resorbed. If it does not disappear it should be treated by puncture and aspiration alone, unless there is a severe lesion of the lung or much hemorrhage. Repeated puncture of the thorax is not so good as the prolonged use of a special canula with a valve attachment. Bad injuries should be opened under a negative pressure.

In wounds of the lungs or bronchi that are air-tight, it is not necessary to drain, but in the event of loss of substance, as in resection of a lobe, the chest is filled with salt solution before closing. If the wound of the lung is not air-tight, it is best to drain by using a glass tube with its outer end closed by a finger cot.

Seidel champions Brauer's overpressure apparatus, which he believes is physiologically and practically identical in its workings with the Sauerbruch chamber. The objections to overpressure based on a supposed impairment of the respiratory and circulatory balance, are purely speculative, and by experiments on rabbits and dogs he shows that there is but slight variation from the normal either in respiration or heart rate, that in most instances the blood pressure is raised a little. The apparatus is small and less expensive than Sauerbruch's, and consists of a box in which the head is inserted and anesthesia administered (observation being made through a glass window). The hands and arms of the anesthetist inside the chamber and the neck of the animal are encircled by rubber shields, which permit of the maintenance of an increased pressure by means of a foot bellows with a strong rubber bag that keeps the pressure constant. For small animals this pressure is measured 4 cm. to 6 cm. in a water glass; up to 10 cm. for large dogs,

and 12 cm. for man. This overpressure must be just sufficient to prevent pneumothorax as an increase beyond this point will cause increased blood pressure with change or tears in the lungs, or atelectasia. The success of overpressure does not depend on the distention of the lung, but on the respiration of slightly compressed air without variation in pressure. By comparing his physiologic findings with the published results of Sauerbruch, Seidel concludes that there are fewer variations than when the lower pressure cabinet is used. The mistake is too often made of using too high pressure, and as the intrapleural pressure varies, so the overpressure must be regulated to suit the individual case. Tracheotomy should be avoided. On account of the safety of narcosis and the practicability of the procedure, the overpressure apparatus is, for every purpose, as useful as the Sauerbruch chamber.

Robinson has adopted for animal experiments the increased pressure, but he used, instead of Brauer's box, a mask that fits the animal snugly and anesthesia can be conducted automatically by means of a system of pumps and tubes which are supplied with ether vapor. Besides the attempt to perfect this apparatus, he has proven that most of the objections of Sauerbruch to overpressure are not valid. That is, he shows that under the proper pressure which prevents pneumothorax, respiration remains normal, that no emphysema follows, that pneumothorax does not persist after the wound is closed, provided at the last moment a slight increase of pressure is made. It is not necessary to tracheotomize, and anesthesia has been quite even. There is a loss of body temperature, but this can be avoided by raising the temperature of the surroundings. He performed some thirty experiments on dogs, excising lobes or whole lungs or merely doing a pleurotomy, and over two-thirds of the dogs recovered. This is the best percentage of recovery yet shown in experimental work. Some of the failures in his earlier work were due to a faulty aseptic technique, which he later perfected. He also draws attention to the difficulty of obviating the dead space remaining after an incision. With this apparatus from 4 c.m. to 6 c.m. of water pressure was sufficient usually, but occasionally it was increased to 10 c.m.

Friedrich in his address on lung surgery closes his review of the accomplishments just previous to the Sauerbruch-Brauer period, by giving his experiences with the lessened pressure chamber, and emphasizes the great opportunity that is given by a wide opening of the pleura and the making of an exploratory thoracotomy, when pneumothorax is prevented. Unless the lessened pressure is reduced below — 3 m.m. pneumothorax is certain, between — 3 and — 5 there is a "relative pneumothorax," and between — 6 and — 8 there is an emphysema. For man and animals the state of "relative pneumothorax" is the one best suited for long operations. By a gradual change of the pressure in the cabinet it becomes easy to locate injuries, or pathological conditions in the lung by the change in color and circulation, induration or other differences, which is possible only when pneumothorax is prevented. Attention is called to the fact that great traction on the lung or injury or dragging on the hilus, is followed by stopping of respiration and a rapid sinking of blood pressure. There is a very untoward result from any pressure against the posterior mediastinum. Lung surgery has become a special surgery and should only be practiced by those thoroughly familiar experimentally with the newer methods. In man one runs about the same risk from infection when opening the pleura as when the peritoneum is explored, but the manipulation of the lung and the various operations on the lung require a special fitness and experience.

DIAGNOSTIC AND THERAPEUTIC NOTES.

THE PULSE IN PERNICIOUS VOMITING OF PREGNANCY.—Blain (*Jl. de Med. et de Chir. Prat.*, 1908, No. 10).—At the International Medical Congress held at Rome in 1902, Prof. Pinard made the following statement in regard to pernicious vomiting in pregnancy: "I do not concern myself either with the loss in weight nor with the intensity of the vomiting. The one feature that I observe with the greatest care is the pulse. Numerous observations have taught me that in women affected with intractable, or better, toxic vomiting, pregnancy should be interrupted promptly when the pulse-rate exceeds 100 per minute. If one waits, this measure soon becomes useless because the intoxication of the nervous system proves fatal in spite of a later interruption of pregnancy." The large material of the Baudelocque clinic has apparently confirmed this dictum fully. Seven cases of toxic vomiting in which pregnancy was interrupted according to the above rule resulted as follows: Five were cured completely, one was cured with the appearance later of a peripheral neuritis, one died but here the cause of death was a pneumonia that came on several days after the miscarriage.

THREE DIAGNOSTIC SIGNS IN ERYSIPELAS.—Milian (*Progrès Médical*, 1908, No. 30).—The diagnosis of erysipelas, especially of the face is not always easy. In the Parisian Hospital, devoted exclusively to this disease, cases of acute eczema, of artificial dermatitis, of ophthalmic zona, of dental abscess, of dacryocystitis, even of mumps, are admitted daily with the mistaken diagnosis of erysipelas. Many of these cases resemble erysipelas somewhat closely and the writer's experience has convinced him that the classical signs, described in the text-books, often do not suffice for a diagnosis. The classical sign most frequently absent is the edematous plateau raising the affected area above the level of the normal skin.

In the diagnosis of erysipelas, Milian lays especial stress upon three signs:

1. The sign of maximum involvement at the periphery (*du maximum centrifuge*); 2, the sign of the ear; 3, the sign of pain upon pressure.

The sign of maximum involvement at the periphery. Erysipelas spreads centrifugally or at least from point to point, so that fresh areas are continually becoming involved, while those originally infected are recovering. It is for this reason that the areas of greatest swelling and redness are located at a distance from the site of infection and at the periphery of the whole region involved. This sign is especially useful when it is necessary to differentiate between erysipelas and an ordinary inflammation, such as a suppurating dacryocystitis, a dental abscess, or parotiditis. These affections may superficially resemble erysipelas, but in them the pain, redness and swelling are at the center of the area involved, not at its periphery. This sign sometimes fails at the very beginning of an erysipelas when only the site of infection is involved. Twenty-four hours later, however, it is usually well in evidence. A possible source of error in interpreting this sign is involved in the behavior of the eye-lids. These structures, as is well known, become extremely edematous throughout their extent as soon as involved and remain so

even when the zone of acute inflammation has passed beyond them. In making use of the sign discussed above, the condition of the eye-lids must therefore not be taken into account.

The sign of the ear. The skin covering the external ear is so closely adherent to the cartilage that subcutaneous tissue may here almost be said to be wanting. It is for this reason that all ordinary inflammatory processes, since they involve chiefly the subcutaneous tissue, are arrested in their spread when they reach the ear. Erysipelas, however, being a dermatitis, spreads readily over the external ear and may by this means be distinguished from dental abscess and the like.

The sign of pain upon pressure. Tenderness to pressure is probably the most constant feature of erysipelas and this tenderness is most marked at the periphery of the area involved. Acute eczema, zona, parotiditis, are not nearly so tender; dacryocystitis, dental abscess and the like have their point of maximum tenderness at the center, not at the periphery of the reddened and swollen area.

CORRESPONDENCE.

LONDON LETTER.

[FROM OUR OWN CORRESPONDENT.]

An annual grant is voted by Parliament in aid of scientific investigations concerning the causes and processes of diseases. The allocation of this grant and the selection of the subjects for research is in the hands of the President of the Local Government Board, who is, of course, assisted by the advice of the Principal Medical Officer of the Board. John Burn's work as President has been a notable success, and the selection made for the current year in this particular matter is a further instance of the keen alertness he always shows for matters of real practical use. The investigations authorized include a further inquiry into the character and differential tests for the micro-organisms found in the throats of scarlet-fever patients. It is pretty generally recognized nowadays that the throat in scarlet-fever, as in diphtheria, is the source of infection, and it will be a very great benefit not only to the profession but to the much-suffering rate-payer if the infectivity of the scarlatina patient can be tested by swabs from the throat as readily as is the case with diphtheria. The prolonged stay in the isolation hospitals of scarlet-fever cases is expensive and, as many believe, quite unnecessary. Protracted and recurrent infection in diphtheria is to be inquired into. Here again it is a moot point as to whether the patient might not get rid of the few Klebs-Löffler bacilli, shown in swab after swab, by removal from the tainted atmosphere of the diphtheria block. Similar protraction and recurrence in enteric fever will be investigated and also the presence of the para-typhoid bacilli in man. Another matter for inquiry, and one which will certainly yield important and, maybe, surprising results, is the rôle of flies as carriers of disease, and also that of vermin. A beginning will be made in a statistical inquiry into the social incidence of disease, the first subject of inquiry being the prevalence of varicose veins and hernia under different social conditions. All these inquiries are placed in the hands of men in the front rank, so that the work done and the information obtained therefrom shall be the best of its kind. Most of the bacteriological work will be carried out at the Lister Institute.

The Annual Meeting of the British Medical Association was held this year at Sheffield and proved a great success. The new President is Mr. Simeon Snell, Ophthalmic Surgeon to the Royal Infirmary, Sheffield, who in addition to his Residential honours was awarded by the Association the Middlemore Prize in recognition of his valuable and important contributions to ophthalmology. In his comprehensive address he devoted particular attention to the question of miners' nystagmus. His own investigations have done much to elucidate the nature and consequences of this "Industrial" disease. He gave an account of some experiments which most conclusively demonstrated that a miner suffering from nystagmus is quite unable to recognize the danger-signal of fire-damp shown by his lamp. This bit of work by itself is of great value as it points out a preventable cause of the terrible disasters entailed in mine explosions. Mr. Snell puts the proportion of miners affected by this disorder at 4 per cent.; other observers give a much higher figure.

The disease is of great medico-legal importance now in this country for it is one of those scheduled for which workers may claim compensation. The aetiology is still obscure and as there is no known method of prophylaxis, the subjects of the disease must be forbidden to work in the mine, not only to cure them of this trouble, but also for the protection of their fellows.

The Address in Medicine was given by Dr. Kingston Fowler, Senior Physician to the Middlesex Hospital and Dean of the Faculty of Medicine in the University of London. It is a thoughtful contribution on the subject of Modern Medicine and is full of matter for careful and earnest thinking. In the main, Dr. Fowler dealt with the advance of vaccine-therapy, and took the position of a pious but open-minded thinker on the subject. He has little doubt as to the great advance which the introduction of vaccine-therapy marks in the treatment of the infectious diseases. He made an interesting reference to the system of graduated labor introduced by Dr. Paterson at the Frimley Sanatorium of the Brompton Hospital and the results as shown by the estimation of the opsonic index of the patients undergoing treatment for tuberculosis. Examinations showed that 95 per cent. of the patients working in the various grades of labor ranging from walking, carrying baskets loaded with varying weights of earth, and digging, to working as navvies upon the construction of a reservoir, were found to have opsonic indices above the normal at some time during the day. Dr. Fowler looks forward to a more general use of sanatoriums for a variety of affections other than tuberculosis. As to the physician of the future, he must continue to be, as in the past, above all things, a man of wide clinical experience. He will have to deal with human nature just as all his predecessors have done. The common road that all must tread who aspire to treat disease will lie through the wards, the post-mortem room and the clinical laboratory, and "will always lead back to the bed-side." The address is excellent reading and fully maintains the high standard always expected on these occasions.

The Address in Surgery was delivered by Mr. Rutherford Pye Smith, Professor of Surgery in the University of Sheffield. The key-note was prophylaxis and, as is only to be expected from one of his name, the subject was thoroughly well handled.

The Medical profession in general and Guy's hospital in particular have sustained an irreparable loss by the death of Sir Thomas Stevenson, a man of world-wide reputation in his chosen ground of forensic medicine. He was a most careful and shrewd observer and inculcated the necessity for close observation in his lectures on chemistry and on forensic medicine. A constantly recurring phrase was, "You will observe, gentlemen." He was one of the kindest hearted of men, yet the irony of fate was such that it was his evidence that put the rope round the neck of some of the most cunning murderers for some years past. He was unrivalled in his expert knowledge of medicine and chemistry.

August 20th.

PARIS LETTER.

[FROM OUR OWN CORRESPONDENT.]

The subject of how to protect the organism against exogenic toxic substances, is still in the incipient stage despite the experiments on immunity—experiments from which have issued vaccination and serotherapy. Every day, we might say, we are apprised of new facts, but of these some are so paradoxical, because they fit in so badly with our ideas of the intangible laws, that they may easily be construed into an indignity to our modesty and prudence. Such, for example, is the singular phenomenon that Professor Charles Richet has characterized as anaphylaxis. Taken literally, this word means the opposite of prophylaxis; but before arriving at this conclusion it is necessary to study further its meaning.

Arloing, Courmont, Brieger, Behring, Kitashima, have already observed that the introduction of pathogenic microorganisms into the living body, modifies it in such a way that when subjected to a new infection it succumbs much more readily than if the infection were the first. Now the study of certain poisons really led Professor Richet to his analogous discovery; for the problem which he was attempting to solve was, how progressively to increase one's sensibility to poisons inversely to immunization; that is, against protection.

Though the phenomenon of anaphylaxis may be brought on by a number of substances (poisons and toxalbumins) it can be observed to a nicety in all cases where the poison is derived from *Actinia*. Richet has extracted from the *Actinia* a poison which he calls *congestin* on account of the quality it contains to cause an intense congestion of all the abdominal viscera—stomach, liver, kidneys, and, above all, the intestines. After determining its degree of toxicity, he injects into dogs doses not fatal; and in case a dog apparently immune, completely recovers from the first injection—even showing an increase of weight—he injects, from four to eight weeks after the first injection, a dose equal to one-twentieth of the first. Immediately, or at least after some seconds, there appear symptoms of intoxication of extreme gravity, ending in complete paralysis with absolute insensibility of the animal. It is this hypersensibility to the poison which is created by the first dose, that Professor Richet calls anaphylaxis.

Another important fact is this, that when the blood of an anaphylactic animal is injected into a normal dog there is started the phenomenon of anaphylaxis. Therefore it is evident that the substance which produces this phenomenon is contained in the serum of the originally injected animal. But this substance is not a true toxin since in itself it is not toxic, for the dog continues in good health despite the slight disturbance following the injection of the serum. On the other hand, it is undoubtedly capable of developing into a poison if it is followed up by further doses to which the *congestin* is antagonistic. "Then it is not a toxin," says M. Richet, "but a toxogenin;" and he demonstrates the fact of its presence in the following two ways: First, the dogs which received an injection prior to the elapse of forty days, have, when another injection is made, vomiting and paraplegia,—disturbances which should manifest themselves only after the second intravenous injection. Hence, another poison is produced. The author calls this *apotoxin* (a derivative of toxin) and further states that it is completely different from toxogenin or toxin. Second, the serum from anaphylactic dogs contains toxogenin because normal dogs that have received an injection of anaphylactic serum have

almost the same sensibility as anaphylactic dogs. Again, anaphylactic dogs are put in a state of sensibility by three small doses of congestin—that is, at the moment when there is no congestion in the organism. Hence we can conclude, that the moment of the appearance of toxogenin is coincident with the disappearance of toxin.

One can readily understand the importance of these experiments directly we transport them into the domain of clinical medicine; for the evolution of infection, for example, would be decidedly modified if an organism were subjected first to an injection similar to the infection which develops. Vaccinia and variola, notably, have been objects for investigation from the standpoint of anaphylaxis. Von Pirquet of Vienna, who has recently published a monograph on the subject, states that revaccination produces characteristic symptoms; that by comparing the evolutionary processes of the pustule produced by vaccination and the pustule by revaccination, the latter is more evident than the former; and that after many inoculations the hypersensibility is sometimes so marked that the papule forms some twelve hours after inoculation. Thus, from the standpoint of anaphylaxis, variola appears to present all the salient points of resemblance with vaccinia in an intensified form. And perhaps varioloid is but an anaphylactic modification of variola.

It is needless to add that the anaphylactic phenomena will have a decided bearing on infection by the tuberculosis bacilli. Further, it can be said without reservation, that in the near future the tuberculosis problem will show far-reaching results in a therapeutic sense. Syphilis, scarlet and typhoid, should also be included.

The study of this matter then, being of the greatest interest from the standpoint of pure therapeutics, should be thoroughly examined with a view to pathology and general therapeutics, because of the probability of finding, according to M. Richet, an explanation of the strange and as yet imperceptible phenomena which to-day are called idiosyncracies. This term is employed to designate the differences in reaction of divers individuals, but, though quite learned in appearance, poorly disguises a deplorable ignorance. In recognizing that an anaphylactic dog is more liable to an infection than a normal dog one understands the cause of its hypersensibility since a poison has been used to bring about this state. On the other hand, if the cause is ignored, as frequently happens in clinics, one is forced to conclude in explanation of this apparent anomaly, that the hypersensibility is due to an idiosyncrasy. Therefore, we may add that the study of anaphylaxis will be the means of throwing considerable light on very obscure phenomena.

August 20th.

OBITER DICTA FROM FOREIGN JOURNALS.

THE INSANITY OF GUY DE MAUPASSANT.

In connection with the article which Albert Schinz, professor of French literature at Bryn Mawr College, recently published on the last days of the well-known French writer, Guy de Maupassant, it would be well for medical men to peruse carefully the following scientific, if less literary, paper by MM. Rémond and Voivenel, which we reproduce in full from *Le Progrès Médical* of May 30th. Professor Schinz, borrowing his idea of Maupassant's mental derangement from French literary sources, is quite emphatic in proclaiming it to have been general paralysis of the insane. That he and other well-known critics are in the wrong is made evident by the French physicians:

Maupassant wrote even in the last period of his insanity. The first manifestations of a nervous derangement appeared in 1875, and between this date and 1893, the year of his death, his greatest works were written. Hence a study of his psychosis is not without value as a means of comprehending his books, and of explaining satisfactorily his actions towards the close of his life; in particular, the series of law suits he instituted against various publishers.

Much has been written on the subject of this author. Medico-psychological studies of well-known writers are the fashion nowadays; therefore it is well to mention here Lombroso's "Souvenirs of Maupassant: His last Illness, his Death" (Souvenirs sur Maupassant: sa dernière maladie, sa mort. Rome: Bocca frères, 1905) and Edouard Maynial's "Life and Work of Guy de Maupassant" (La vie et l'oeuvre de Guy de Maupassant, édit. du *Merc. de France*, 1906). The former is too diffuse and is moreover badly arranged as are all the books by this romancer of medicine; while the latter, though precise and well-written, is most defective as a medical study. Then there are the articles by Cabanès (Guy de Maupassant chez le Dr. Blanche. *Chronique médicale*, 1897), by Mme. Alphonse Daudet (Souvenirs et impressions, *Revue de Paris*, 1897), by Faverolles (*Gaulois* 12 octobre 1897), by Ad. Brissot (L'enfance et la jeunesse de Maupassant. *Le Temps* 7 décembre 1897), by Paul Marion (Guy de Maupassant. *République Française*, 22 mars 1904), and by Max Nordau (Vus du dehors), which do not touch on the diagnosis of his neurosis; and J. Grasset's "The Semi-insane and the Semi-responsible" (Demi-fous et Demi-responsables, p. 145—F. Alcan, 1907), in which the author contents himself by stating that Maupassant was confined to a sanatorium, that his psychoneurosis covered many years, and that he had hallucinations. Some of these writers assert that the gifted author's mental state was normal for a number of years and that the first manifestations of a mental disorder became evident during the period in which he wrote the weird and grewsome fantasy, "The Horla." Others are of the opinion that he was a degenerate from birth; Nordau, ever ready to be unjust to the literati, going so far as to affirm that he is able to find traces of his constitutional insanity in his earliest books. As for Zola, Lemaitre and Roujon, they are just as enthusiastic in stating that Maupassant's mind had unusual strength and clarity, save at the close of his career. Again there are some who, taking into consideration the disordered activity which the author showed before

he became a megalomaniac, regard his symptoms as those of general paralysis of the insane. Now despite these many opinions we have arrived at other conclusions—conclusions which, based as they are on a study of the author's antecedents, his life, his work and his death, make us firm in our opinion that the diagnosis of his malady must resolve itself into progressive systematized delirium.

Progressive systematized delirium, known anatomically as leucoencephalitis (*Maladies mentales*—A. Rémond, de Metz), begins generally, as in the psychosis of Maupassant, about the thirtieth year. The subject, easily fatigued, resembles a melancholic, however, with this difference—and this is important to remember—that he searches in his surroundings for an explanation of his malady, while a melancholic always finds it within himself. Four periods which have been thoroughly studied by Magnan and Sérieux (*Le délire chronique: collection Léauté*. Paris, Masson, 1892) are evident in the evolution of chronic delirium into the systematized sort. The first period, or period of incubation, is generally unperceived and is characterized by restlessness; the second period, or period of beginning systemization, has for its salient feature the troublesome preoccupations of the delirium of persecution; the third period, the period of accentuated systemization, is the delirium of grandeur; and the fourth period is marked by terminal dementia. Now these four periods are to be found with all their characteristics in the mental disease which afflicted Guy de Maupassant. That there was a predisposition can not be doubted, for his mother was highly nervous, sensitive to excess, and very intelligent; while his father was a voluptuary from whom the author inherited his numerous excesses—enormous appetite, sexual excesses, and an inordinate indulgence in morphine, ether, and hashish.

The first period, or period of incubation in Maupassant's insanity, with its characteristic of restlessness, began about 1878, an epoch in which "the robust provincial citizen" gave evidence of being "a sad and melancholy giant." In his novel "Strong as Death" (*Fort comme la Mort*) he writes: "I ask myself continually if I am not ill, for I have only disgust for what I used to do with considerable pleasure. My brain is an arid waste, my eye has lost the sense of sight, my hand its cunning. These futile efforts to work exasperate me. What ails me? Have I got failing sight, brain fag, weakening of the artistic faculty, or atrophy of the optic nerve?" And here, by the way, it would be well to mention that in 1878 Dr. Landolt noticed a decided inequality in his pupils.

Instead of showing the expansion so frequently observed in the beginning of general paralysis, Maupassant became a prey to an incurable sadness. In fact so great was the obsession that he absented himself from everything that might deprive him of his solitude. Here are his own words: "I would rather be alone, in fact, so remote from society that even the possibility of others, though they be strangers, sleeping under the same roof with me, could be done away with. I can not live in Paris on account of an indescribable agony. The swarming crowds around me, even when I am asleep, torture my body, my nerves; in a word, they completely destroy my moral nature."

When the second period, or period of commencing systemization, gradually developed with Maupassant, his troublesome preoccupations assumed a decided form. He imagined himself the victim of an exploitation on the part of publishers; he found fault with everything and everybody: his disgust of life evidencing itself in his many grievances

of which the best manifestation was his innumerable lawsuits. Hallucinations tormented him; the first being of an auditory nature, excellently described by himself in his book "On the Water" (*Sur l'eau*) as a voice "surcharged with terror and dismay, awakening the frightful distress which lies dormant in the heart of the living." Then followed hallucinations of taste, of sight; similar to Alfred de Musset he presented the phenomenon of autoscopy. Sollier touches on this in the following: "Seated, one day, at his desk in his study, Maupassant thought he heard the door open. His servant had orders never to allow any one to enter when his master was busy. The author upon turning around was not a little surprised to see his own self seated opposite himself, his head resting on his hand in the act of dictating all that he (Maupassant) was writing. When Maupassant finished, he arose, whereupon the hallucination disappeared."

The systemization grew more and more salient in the third stage. Maupassant made all sorts of accusations against friends and acquaintances, even going so far as to hold them responsible for his mental depression. In 1888 he brought suit against the literary supplement of the *Figaro* for Bowdlerizing one of his articles. In 1891, he sued Havard, his publisher, because the edition of "La Maison Tailleur" was exhausted. The same year he had a suit on his hands with a New York journal. By logical deduction he believed himself a very important personage; as was instanced when the publication of his portrait without his authorization sufficed to make him enter suit against the publisher, Charpentier, in 1890. Now this is not at all characteristic of general paralysis of the insane. To further show his delusions of grandeur the following excerpt from Goncourt's *Journal* (vol. VIII.) ought to suffice: "Maupassant spoke of a visit which he had paid to Admiral Duperré on the Mediterranean coast, and the cannon salutes fired in his honor. He was quite sure that the melinite used amounted to many hundred thousand francs. The most extraordinary part of this recital was that some time after, Admiral Duperré stated he had never met or seen Maupassant."

Finally, we arrive at the fourth stage in Maupassant's paranoia—namely, dementia. He imagines he has a dual personality similar to his tale "The Horla;" that two individuals co-exist in him. He feels himself possessed; a demon, the Horla, is his master. He creates, as is not unusual with those afflicted with progressive chronic delirium, a neologism (Wahl—*La phraséologie de certains dégénérés*. Archives de Neurologie, février 1907) which may be described as hostile to order and synthetic of the whole group of phenomena. The letters he writes in 1891 are, according to Maynial, "characterized by mistakes in orthography and French, by unfinished phrases, by contradictory statements, and by wrong words, manifestly written instead of the right ones." The dementia increases; he attempts suicide with a paper-cutter, and in a moment of lucidity requests to be sent to an asylum. At this place, he talks incoherently. He refuses to eat the grapes sent him by Mme. Lecomte de Nouy, declaring "amidst bestial laughter" that "they are copper. Lombroso says 'one day, Maupassant stopped in front of a flower-bed and planting a branch of a tree, said to his attendant: 'Let us plant it here and nowhere else because next year instead of a tree you will find on this very spot many Maupassants.'" And according to Pol Arnault at times he did not recognize his friends and often became so violent that a straight-jacket had to be placed upon him.

When we take into consideration the facts that Maupassant's mental disease began in 1878 and terminated in 1892, that there were periods of restlessness, of systemization, of delirium of grandeur, of dementia; and that in its evolution—which by the way was too long drawn out to confound his ailment with general paralysis of the insane—it assumed the character of paranoia querulens with the classic hallucinations of sight and hearing, we can not but conclude that the mental disturbance afflicting the author, was progressive systematized delirium. The absence of an autopsy prevents us from saying positively that our diagnosis is correct, but the clinical history of the case makes us firm in the belief that, according to the anatomico-pathological classification of the psychoses, the disease was leucoencephalitis. And furthermore, the systematized mental disorder, developing into a leucomyelitis, a tabes, started in the nerve fibres and only later involved the cells.

HISTORICAL NOTES.

THE DENTIST, WITH A BOY, WHOSE TOOTH HE HAS JUST EXTRACTED.

That the art of dental surgery has made many advances since the end of the seventeenth century is graphically shown in Gerard Dou's masterpiece, "The Dentist." Decamps in his "Biography of Dutch Painters,"



THE DENTIST (Gerard Dou, 1672).

calls the artist the greatest of the "Little Masters" of the Dutch School, and if infinite pains and truth to nature stand for anything in the world of art, we are not far wrong in regarding this picture as one of its best

expressions. But it is more than this to those students of medical history who are interested in the low beginnings of one of its branches, for here we have the bald facts pertaining to an embryonic stage of a science which to-day has reached heights undreamed of years ago.

Though we of to-day do not know what views Gerard Dou held as to the seriousness of the art of dentistry, his pictorial representation, as judged by the modern spirit, cannot but proclaim that aside from brilliance and vigor, the artist's observation of experience in dentistry must have been keen enough to make him intensely appreciative of its comic phases. The *al fresco* performance, so indicative of the spirit of the times as it prevailed in the Seventeenth Century, the triumphant expression on the dentist's face, as he holds the offending tooth on high,—an expression assumed, we imagine, to impress the interested audience of bystanders with the idea that they were really in the presence of one of unexceptional force and expansion; the sheepish look of the patient, which can easily be resolved into a combination of partial relief and nascent fear lest the tooth is still in his head, though somewhat qualified by the thought that perhaps "he had won through, in the end, to peace and security," are such truth-telling bits of humor that, by comparison, the written page of a similar incident in the daily career of a seventeenth century dentist would pale into insignificance.

The worst abuses which have characterized any age are always put to flight by ridicule. Serious thought may after laborious efforts awaken the masses to vitiations which their *laissez-faire* has allowed to exist, but the sudden wrench from a calm security is always effected by wit tinged with mordacity and acrimony. And looking at Gerard Dou's pictorial presentation of primitive dentistry, we cannot but think,—though the literary evidences of the age bearing on his life are not illuminating,—that besides being a careful and painstaking painter of *chiaoscuro*, he had within him the deeper knowledge of the laughing philosopher who knows that a barb, if pointed with the nettles of humor, is much more far-reaching than all the invectives a serious pen might indite.

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EDITORIAL.

A NEW GUIDING FORCE.

Those among us who are pessimistic as to the future of the art of conversation should not be bowed down any longer, for out of Germany has newly come to us a brochure entitled "Medical Eloquence" (Aeetliche Beredsamkeit)* by Dr. med. Henry Hughes, which is the exhaustless cruse we have been keenly awaiting to prevent verbal awkwardnesses in circumstances that call for diplomacy and astuteness. Most physicians who think at all have, at one time or another, felt that in this age "of loud disputes but weak convictions" some one moved by pity ought to effect a conversation book for the busy practitioner, to be referred to in case he feels that a slight conversational indiscretion, at a time when the right words of advice and of consolation are expected, might cause unpopularity, with the usual stigmata, by raising a pothor in families heretofore friendly to him. Now though the pamphlet under consideration is the very type and norm of the thousands annually produced in Germany, it is arresting, inasmuch as it carries to successful issues, the knotty problems involved in what should constitute the correct filiation of ideas when the sorely-tried doctor is called upon to assume the role of philosopher.

According to many thinkers in the realm of medicine, it is well for the medical aspirant after the guerdons of popularity and success, to adapt himself to the daily walk of the various classes, so that the atmosphere of their daily life and the staple of their daily conversation will not be foreign to him when a critical time arises demanding gentle exhortation to meet their real wants. An apprehension of this need has been dwelled upon so often that its mention here must strike the reader as a commonplace of criticism, but though the mastery of the art of the right word may be achieved after an arduous apprenticeship of

*Aeertzliche Beredsamkeit. Von Dr. med. Henry Hughes, Arzt in Bad Soden a. T. Curt Kabitzsch (A. Stuber's Verlag), Wuerzburg, 1909.

some years, we doubt if conversation specially prepared for emergencies, such as those described by Dr. Hughes in his book, are virile enough to stand in the foreground of modern medical thought. For the quicksands to avoid in doling out sympathy or strong words tinged with a kindly philosophy, are not merely the verbal mistakes that bring their own retribution with them, but a stiltedness and preparedness through whose thin veil the discerning at once detect the falsity and insincerity of our sentiments.

A complex problem, indeed, is the matter of effective words to bring about the mental uplift of a patient cowed by real or imaginary torments. Should a fragment of truth in regard to pain, magnified though it be to the *n*th power, be combated by something besides a positive negation born of bluntness and crudity? and, on the other hand, should a truthful but uneducated statement, dissociated from exaggeration, though clairvoyantly understood by a mind penetrated with the scientific spirit, be graciously received despite the fact that its halting presentation has the hall-marks of unintentional inaccuracy? What sort of conversation on the part of the physician best applies in each case? Beyond a doubt, generous candor in certain crises works woe and duplicity,—does justice only to the rather base impulses characteristic of the spirit of contented shallowness. It is obvious, then, that mere words, learned parrot fashion from a book indited by a conventional mechanic of the pen, will cause only anguish to the cultured and convert the unlettered from mild creatures, begging for assuagement, into truculent beings demanding in loud, peremptory tones, immediate relief.

To postulate that in a case of renal colic composure will ensue if the physician exercise the gentle philosophy of benignity, instanced by sympathy and a description of all future attacks as matters not to be feared but to be met with a joyful mien, is carrying the optimism of these modern days too far, and, moreover, proclaims Dr. Hughes a delightful expression of the affluent mind environed by seriousness and untouched by humor. Again, to engage a patient in earnest and abstruse converse on the harassed subject of heredity, when fear is besetting her lest some manifestation will sooner or later evidence itself, is the sort of mental healing that can benefit only strong minds and, we take it, the mind of the victim of the author's dialectics was far from strong; otherwise there would have been interruptions on her part, a fact not to be noted. Indeed, in this apogee of the nonsensical, devoted to many sermons on how to treat frivolity, immorality, self-sacrifice, melancholy, horror of death, heart disease, renal colic and various other disturbances, conversationally, the patient's point of view, as it would be expressed in words, is completely ignored; from which we infer that

tolerance of another's opinion is quite foreign to all apostles of conversational therapeutics, who assume a prophetic attitude toward those whose individual enthusiasms are below par on account of an aridity resulting from lack of tenderness and moral elevation.

THE MONTHLY STATEMENTS OF THE ST. LOUIS HEALTH DEPARTMENT.

Of all the periodicals which reach our desk, none exceed in interest the monthly Statement of the Health Department of this city. Should there be any among our readers who fail to look as carefully over these statements as the carefulness of their compilation deserves, we would urge them to "get the habit." If the average citizen feels justified in devoting a half hour daily to his favorite paper in order to learn what his fellows are about, may we not expect that the physician should, once a month, devote one-sixth of that time toward informing himself as to the status of his town in those matters which chiefly concern him? He will here find a sort of balance-sheet, exhibiting the final results of his activities. We say of *his* activities, for while his therapeutics are perhaps the least of the factors which control the death-rate, it remains true that the great hygienic and sanitary movements originate in and are chiefly promoted by the faculty. He will find here much to stimulate his zeal, and sometimes a corrective to his pride. Unless he make it his business to keep informed as to the sanitary condition of the community as a whole, he will soon lose touch with the more progressive part of the profession, for the physician is every day becoming more of a statesman, in the best sense of that term. Beside the necessary relation of the individual doctor to the individual patient, the profession is rapidly becoming, in its corporate function, the healer of the nation. We doubt not that the beneficent rôle of the doctor as a publicist is becoming better appreciated; his voice will be hearkened to the sooner in matters not purely medical, and the intellectual average of public opinion thereby correspondingly raised.

Let us take the last monthly statement received, that for June of this year. We will incidentally note some odd things requiring explanation. First of all is the department estimate of the population, 722,200. This is smaller than some of the newspaper and directory estimates, and probably nearer the truth. We read that the figure is "computed on census figures of 1900 (575,200) at the rate of two per cent. annual increase." Formerly, and until last April, the department's estimates were at the rate of *four* per cent. annual increase, but this was changed when the census showed the population in 1900 to be, as above stated,

575,200, whereas the department's estimate for that year computed at 4 per cent. annual increase over the figures for 1890 (460,000) had been as much as 623,000. But the strange thing now is that *two* per cent. annual increase over 575,200 will not yield 722,200, or anything like it, for 1908. We are at a loss to know why this misleading statement is made. The fact is that the estimate as published is based on the police census of 1907, modified by certain considerations, such as the large afflux from without the city. We are not in a position to question the correctness of the estimate, but protest against the statement that it is "computed on the census figures of 1900, at the rate of two per cent. annual increase" when it is manifestly not so computed. We may get a hint as to the present population from the figures for 1890 (460,000) and for 1900, which show an increase of twenty-five per cent. for that decade.

The next point of interest is the proportion of colored to white, there being 46,500 of the former to 675,700 of the latter. These figures, however, like that for the total population, are only estimates. Taking the more reliable census figures for 1900, we find whites, 538,200, and colored 37,000, or 6.9 per cent. of the whole. Of course, this does not mean that the population of the city contained in 1900, 6.9 per cent. of African blood, since those having as much as seven-eighths Caucasian ancestry were still counted as "colored."

The death-rate for the month is given at 0.99 per 1000 for the white, and 1.67 for the colored. In other words, a colored individual's chances of dying within that period were, to a white person's, other things being equal, about as 17 to 10. Contrariwise to what one might expect, while the colored population during June furnished 12 per cent. of the deaths at all ages, there were among them only 7 per cent. of the deaths occurring under five years of age.

Turning our attention to the first table, giving the reported mortality for June, we at once notice a curious apparent discrepancy which requires an explanation. The causes of death are listed in horizontal lines, while the vertical columns show age, sex, social relations and color. Now the additions for "ages" do not agree with those for "sex," "social relations" or "color," the last three, however, agreeing among themselves. This is explained (but not in the "statement") by the fact that only adults are listed under "sex" and "social relations," while "color" for those under five years of age is shown in a separate column.

Glancing down this table, we are shocked to learn that one death in about thirteen was violent, while every sixty-second death was a suicide. The number attributed to malignancy, 49, is appalling when

we reflect that many deaths really due to cancer are reported under other titles. If we estimate that a case of the fatal sort lasts on an average five years, we reach the conclusion, even taking the figures as given, that there must be nearly three thousand fatal cancers in St. Louis, not reckoning the slow-growing superficial epitheliomas usually amenable to treatment.

The table giving total deaths and death-rate, and deaths from the eight principal zymotic diseases, in eleven of the largest cities of the United States during 1907, is highly interesting, but not convincing as to death-rates, inasmuch as the population for each city is merely estimated and may in some instances be wide of the truth. On the face of it, St. Louis makes the best showing of all, with 14.54 deaths per 1000 annually. San Francisco and Chicago are almost tied for second place, with 15.20 and 15.25 respectively. New York has 18.48, while New Orleans has the highest death-rate, 21.74. While the population of the latter city is not quite half that of St. Louis, the number of deaths from consumption is nearly as great (1052 to 1109). In other words, one's chances of dying of consumption in St. Louis are one-half of what they are in New Orleans; about one death in nine (10.7 per cent.) in St. Louis last year was due to consumption.

There is a map showing the boundaries of the sanitary districts, with the population and number of deaths in each. One might suppose that the down-town congested districts, with their crowded tenements and filthy courts, would show a far higher death-rate than the zone lying to their west. A critical study of the report for June, however, shows no such condition.

The city is divided into seven sanitary districts. Districts 2, 3 and 4 comprise the territory bounded on the east by the river, on the west by Jefferson avenue, and stretching from Palm street (3000 N.) to Arsenal street (3100 S.). While this tract does not cover more than one-tenth of the incorporated area, it harbors 40.4 per cent. of the inhabitants. In June it furnished 41.2 per cent. of the deaths. The difference between these percentages is sufficiently small to fall easily within a margin of variation explainable without an appeal to such factors as overcrowding or inferior living. Taking these figures alone, one is led to believe that the down-town parts of St. Louis are as sanitary as the West-End.

Taken as a whole the report shows St. Louis to be a healthful city, and reflects credit upon our Health Department.

THE PSYCHOLOGY OF SUCCESS.

The absorbing topic of psychology is in the air. The etymology of Abracadabra is simplicity itself compared with the variegated studies which have avalanched us of late. To mention the most important there are Th. Ribot's "Psychologie der Aufmerksamkeit" (Leipzig, Ed. Maerter), Dr. Theodor Kappstein's "Psychologie der Frömmigkeit" (Leipzig: M. Heinsius), Vorbrodt's "Psychologie des Glaubens," Edward Bradford Titchener's "Elementary Psychology of Feeling and Attention" and David C. Taylor's "Psychology of Singing." A formidable array, these, with enough of the subtleties of the subject to minimize polemical antitheses. But the calmly scientific mind, though open to persuasion, is somewhat mystified, if not alarmed, by the onslaught, and though its dominating qualities are acutely sensitive to new impressions and opinions when their stamp is not that of an extraordinary assertion, many objections are rightly raised by it against the literary offering not narrated in the scientific temper. Now, of all the recent expositions on certain phases of this interesting subject, none is of greater worth than Dr. Thomas Claye Shaw's recent lecture "The Psychology of Success," for it proves the dictum that "science rests not on intuition, nor on tradition, but on patiently accumulated observations which on a sudden flash into a law."

That our finite faculties are not incapable of achieving success when allowed the freedom that comes from a disregard of the seething currents of conflict between social and mental inequality that rages without—a rude dismissal, so to speak, of all the clashing that is inimical to singleness of mind—is made plain to us by the lecturer in the statement that the fortunate goal may be reached by four mental necessities, viz.: "a clear view of the end, a judicious indifference to the sentiments aroused by the sweeping away of obstacles, an indomitable energy, and a power to resist the temptation to rest on the soporific plain of mediocrity." Here is no mention of those adventitious factors on whose reliance for help depend the illogical for a fruition of their desires. Starting out on their careers with a mental equipment that bespeaks only encouragement from those whose praise is the indiscriminate froth of vapid minds, they are soon engulfed in their self-conceit with results that make even the approach to the outer circles of the glamor of success well-nigh impossible. Unfortunately the realization of all this comes too late, if it ever does come, and then one hears imprecations against an unkind Providence for placing "bad luck" in the way of a specimen of mankind, who, equipped with the highest mental faculties, sought to the best of his abilities to override the obstacles that

would not be downed. And all along troops, if not myriads, of stubborn souls, hearing or reading of this instance of exasperating failure, refuse to learn the penalties the lesson holds; but, making much of the unyielding impedimenta, and giving not even a glance to the real psychological reasons, imitate where copy requires but a quick wit and absolutely no coherence of the highest mental faculties. And thus the category of the unaccountable failures, as judged by those who have fought downwards instead of upwards "through the weight and confusion of earthly things," grows until even the critic imbued with the best gifts of scientific research, is prone at times to forget the psychological reasons.

When psychology is directed to so important a matter as the means of achieving success, the pause it gives us should be fraught with weighty lessons, especially for the American people. For the Alpha and Omega of our earthly careers, according to the pervasive teachings of many of our unwise sociologists with a reputation for power of logic and enthusiasm, is achievement of some sort, no matter what the means. That psychology is a neglected quantity in the presentation of their so-called cogent briefs, is a matter that calls for regret; for its introduction would not only curtail their diffuse discourses, by giving the lie to many of their specious arguments, but would make clear to many befogged intelligences, the hopelessness of their desires, unless backed by something better than the simulation of strong personality, and the various devices, set up by others, as mile-stones on the road to success.

LITERARY NOTES.

A book of interest to medical men who are contemplating a sojourn of some months in Germany, is Mrs. Alfred Sidgwick's "Home Life in Germany" (The Macmillan Company). Most American doctors who go abroad for the first time are quite unprepared for the new, and somewhat strange, conditions which obtain in foreign countries; and granting this to be the case it can readily be understood how ill they fare when rather embarrassing situations arise out of their ignorance of social customs. Of all European countries with which we have any acquaintance, Germany stands easily at the head as regards that bugbear of all travelers—the awe-inspiring Social Feticch. That the terrors of this have been exaggerated by those who, on account of indifference, not to say willful stubbornness, have suffered slights because they overlooked so important a matter as adaptability, has been plain to us for years; therefore any book which sets forth intelligently the why and wherefore of the present social system in a foreign country so that a closer relation between tourist and the people among whom he finds himself may be ef-

the importance of this subject. Medical men fresh from our colleges and about to embark on a European trip are prone to make light of the social customs of a foreign people; that this is wrong and does them infinite harm is made evident to them often when it is too late to reap the full benefits of their stay abroad. Hence books of the excellence of Mrs. Sidgwick's "Home Life in Germany" can not be overrated.

A book which should have a wide circulation is Sir Frederick Treves' "The Cradle of the Deep," recently published by Smith, Elder and Co., London. In this new work of the distinguished surgeon will be found all those qualities of acumen, width of outlook, and literary merit which were distinctive features of "Tale of a Field Hospital" and "The Other Side of the Lantern." Seldom do we find in books written by doctors the commendable qualities which go to the making of a literary production above the ordinary; hence our delight when we come across one that must be considered good literature. Sir Frederick's account of a visit to the West Indies is not a narrative to be lightly read and then thrown aside, for its philosophy is too deep, not to mention its literary charm, to be treated in any manner but that in which an earnest student of literature is in the habit of treating a good book.

Among the books the well-known Paris publishers, Masson et Cie., have recently published the one entitled "L'Asymétrie de la figure" (The Asymmetry of the Face), by Dr. Richard Liebreich, calls for special attention. Contrary to the teachings of Lombroso and his followers, who are of opinion that asymmetry of the face is a malformation, a stigma, a sign of degeneration that accompanies a faulty development of the intelligence, Dr. Liebreich proves the opposite: that asymmetry is a normal condition and has always existed, an opinion based on his measurements of crania and studies applied to the living of the various races. As to the origin of the asymmetry, the author states he has discovered it in certain conditions of foetal life. Fourteen illustrations—crania of mummies, male and female twins, and types of different races—accompany the text. The book concludes with an interesting chapter on the asymmetry of the face as pictured in art.

An important contribution to the subject of arteriosclerosis and atheromasia, is Dr. Teissier's "Artério-Sclérose et Athéromasie," just published by Masson et Cie, Paris. While this new work is not a complete treatise on the subject, it is a monograph of considerable import, containing the author's personal views based on clinical observations,

fect, and foolish pitfalls avoided, is to be welcomed by all who recognize supported by all that pathological anatomy and experimental medicine has already taught us. Dr. Teissier's object, if we have read aright, is to emphasize this clinical point: atheroma and arteriosclerosis are two unlike processes, distinct in their etiology, pathogenesis, and their lesions as in their symptomatic manifestations and their evolution. He reviews successively the etiology, pathological anatomy and pathogenesis of the two diseases; the tendency of hyperdistention in arteriosclerosis; the syndrome of the disease; and the general symptomatology of atheroma. The book ends with a chapter of unusual interest on the treatment of arteriosclerosis based on pathogenic conceptions as expounded by the author.

Those indefatigable researchers in the province of medical history, MM. Witkowski and Cabanès, in their latest contribution, "The Gaieties of Esculapius" (*Gayetez d'Esculape*, Paris: Maloine, 1908) devote a long chapter—125 pages—to the study of the clyster in its historical sense, thereby evolving a unique iconography of a subject in all its serious and humorous phases. Who the inventor of the syringe was is not recorded in history, which is really quite unfortunate, for its usefulness is such that the honored name ought not to be engulfed in oblivion. But though this fact is quite deplorable, the outcome of the inventor's genius is not only highly appreciated to-day but was already known in France in the fifteenth century, where it enjoyed a vogue which placed it, especially in the royal households, in the front rank of domestic Lares and Penates. Thus Louis XI., famous for his constipatory tendencies, so firmly believed in the virtues of the clyster that he had his court physicians to prescribe the same treatment for his greyhounds. And the titles and riches he lavished on the Italian physician, Angelo Catho, were the royal way of rewarding one who had shown what perspicacity and acumen can do in saving a king's life from an attack of apoplexy by the clyster! Henry IV. was not at first favorably impressed with the necessity of frequent injections, but later in his career he became a convert, and like all converts to a good cause, must have become a rabid enthusiast, for in one year his physician, Charles Bouvart, prescribed 215 purgations and 212 clysters. But it remained for Louis XIV. and Louis XV. to celebrate the triumph, the apotheosis of the syringe! No better illustration of its almost deification can be found in history than the following description, which the Duke de la Rochefoucault-Liancourt has left us, of the pomp and ceremony attending an injection administered to Louis XV. in April, 1774: "The

Faculty, gathered around the royal bed, formed itself in line to allow the Master Apothecary, carrying respectfully the syringe, and the page, holding the light, room for the interesting operation. M. Forgeot, the apothecary, having placed himself in a position so that he could work dexterously, was about to insert the canula when all of a sudden the page, fearful lest the intense illumination of the royal anatomy might incommode his majesty, if not be a source of danger to his health, seized a hat belonging to one of the physicians, and quickly installed it between the candle and the royal person. The result can easily be imagined for the complete darkness which ensued was more than enough to discomfort the Master Apothecary. What person, I beg, be he of the most vivid imagination, can conceive of the terrible anger on the part of the apothecary, to whom the eclipse meant disastrous failure, or of the astonishment of the physicians, the indignation of the apothecary's assistant, and the almost irrepressible desire of the courtiers to laugh outright."

Dr. Franz Ludwig von Neugebauer, Director of the Gynecological Department of the Evangelical Hospital, Warsaw, Russia, is the author of a book which bears the title, "Hermaphroditismus beim Menschen" (Leipzig: Dr. Werner Klinkhardt. 1908). As a study from a clinical, anatomical, and medico-legal point of view, the book is arresting for the reason that it cannot fail to be of great utility in determining the sex in all doubtful cases, and assist in revising the social status of abnormal individuals. The work has a completeness that is gratifying, and is made further valuable by statistics of all the known cases of hermaphroditism, or better still, pseudo-hermaphroditism. And here by the way it would be well to mention that Dr. Neugebauer has personally observed and described more cases of this anatomical peculiarity than any other authority. He is already well known as the author of books which have left their impress on the scientific mind of to-day, and in his latest contribution he keeps on the high level of his former attainments. As illustrative of his deep knowledge of the special subject which has engaged his attention for years, are the two papers entitled "Of What Value is a Knowledge of Pseudo-Hermaphroditism to the Practitioner?" and "Has a Hermaphrodite the Right to Determine the Sex to Which He or She Belongs?" which appeared in the INTERSTATE MEDICAL JOURNAL for February and May, 1904, respectively.

ORIGINAL ARTICLES.

THE DEVELOPMENT OF THE EXTERNAL GENITAL ORGANS OF THE FEMALE WITH ESPECIAL REFER- ENCE TO THE HYMEN.

By FRED J. TAUSSIG, M. D., of St. Louis.

In a consideration of the development of the external genitals we must go back to a very early period of fetal life. A portion of the primitive groove between the neurenteric opening and the caudal end of the embryo closes over and we have at this caudal end the formation of a membrane consisting merely of the single layer of ectodermal and entodermal cells without any mesoderm. This membrane, the cloacal membrane, marks the site of the future cloaca. A portion of the enteric canal just anterior to this membrane then begins to proliferate forming the allantois. Along the course of the allantois run the umbilical vessels. It is into the lower portion of the allantois that the Muellerian ducts project and here a little higher are to be found the openings of the ureters. Gradually the septum between the enteric canal and the allantois prolongs downward toward the cloacal membrane so that this area which is generally termed the cloaca is divided into a ventral portion, the urogenital sinus and a dorsal portion, the rectum.

The Muellerian ducts which enter the urogenital sinus at a point slightly above the junction of the sinus and rectum form an acute angle with the sinus. The septum at this angle now begins to prolong so that by degrees the Muellerian ducts point directly outward and we have formed in place of the urogenital sinus, two canals, the one, the urethra and the other, the vagina. The upper portion of the allantois widens to form the bladder.

Coming now to consider the external genitals, we have in the earliest embryos the formation of a central tubercle or prominence with a genital lip and a genital fold to either side. It is only after the embryo has reached a development of 6-8 cm. that the appearance of the external genitals differs according to the sex. The genital tubercle in the male becomes the penis; in the female, the clitoris. The genital lips and folds in the male become the scrotum, in the female the labia. The urethra which in the male enters into the development of the genital tubercle, in the female merely enters the genital cleft or vestibulum without directly being considered in the development of the external genitals.

Standing at the border line between the external and internal genital organs, the hymen has for many years been the subject of much contro-

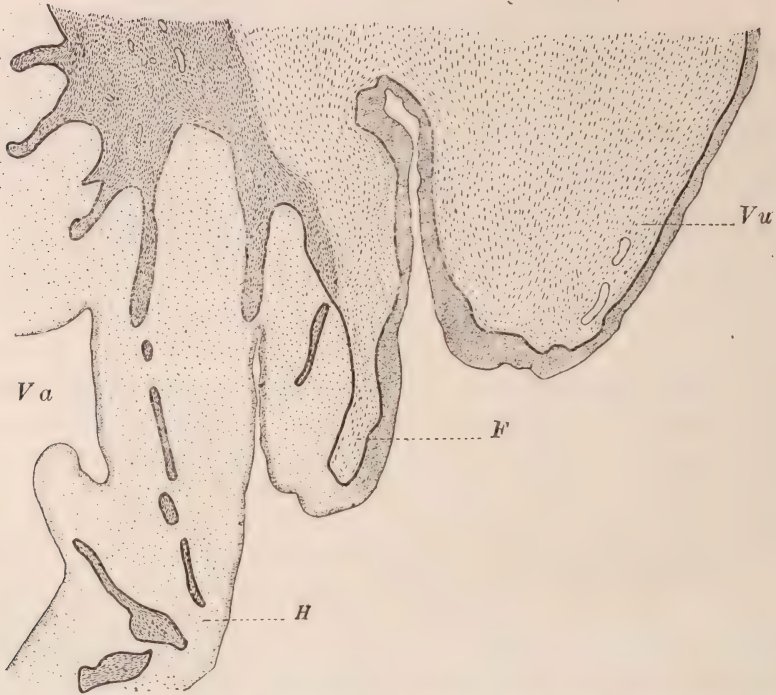


FIG. 1. Drawing of dorsal portion of hymen, vulva and vagina in median sagittal section (Embryo 1). Section No. 183. This shows clearly how the vulvo-vaginal fold is distinct from, and posterior to, the hymen. By their density and direction, the connective tissue fibres of the vagina are set off from the vulvar connective tissue. The difference in epithelium is also indicated in a general way. F., fold; H., hymen; Va., vagina; Vu., vulva. Magnified 40 X.

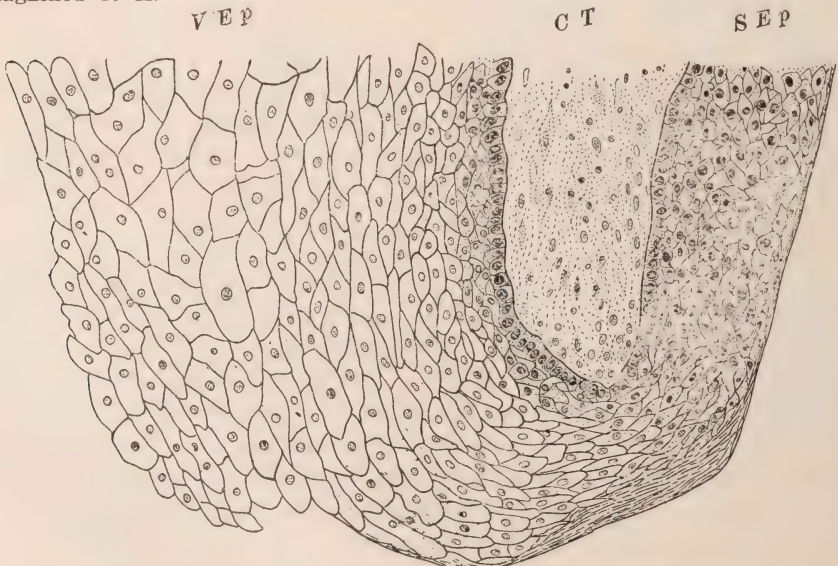


FIG. 2. Detail drawing of the tip of the vulvo-vaginal fold seen in Fig. 1, to show the difference in character between vaginal epithelium and sinus epithelium. C. T., connective tissue; V. Ep., vaginal epithelium; S. Ep., sinus epithelium. Magnified 100 X.

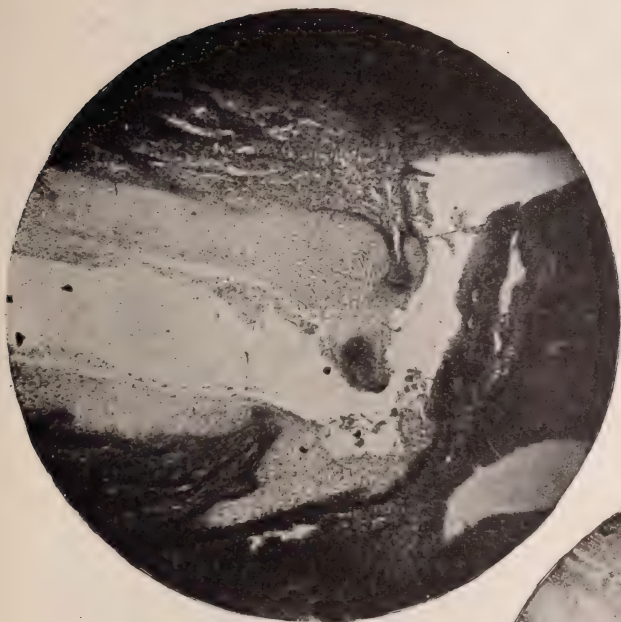


FIG. 3.

that do not meet (hymeneal orifice). To the right of it lies a high, narrow fold, rising from below, lined on the left (anterior) side by vaginal, on the right (posterior) side by sinus epithelium. In Fig. 4 the exact position of this fold and its relations can be better seen. The hymen can be clearly recognized to the left of it as a con-



FIG. 4.

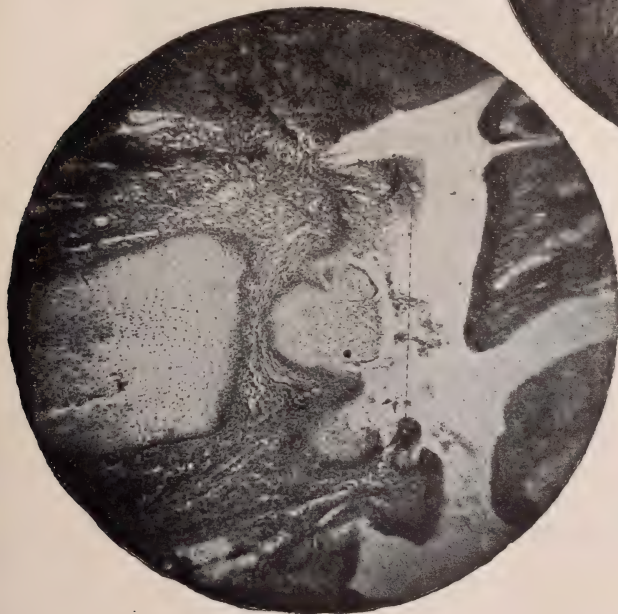


FIG. 5.

FIGS. 3-5. Sagittal sections through the hymen. The dotted line is drawn at the level of the entrance of the vagina into the urogenital sinus. It is to the left of this that the hymen is formed. Fig. 3 strikes above the center of the hymen, so that it appears as folds from above and below

nective tissue membrane lined on both sides by vaginal epithelium. This is the most convincing picture in the series. Fig. 4 is taken lateral to this. Only a tent-like remnant of the vulvo-vaginal fold can be seen below and to the right. The hymen is seen as a thick band. Papillæ appear on the posterior side. Magnified 45 X.

versy among embryologists and gynecologists. Some have studied the subject mainly from the standpoint of malformations seeking thereby to interpret the true formation of the hymen. Others have made gross dissections of fetuses ranging from the 4th to the 9th month of development, and still others have studied these structures microscopically in order to determine their point of origin. Strangely enough, only two writers upon this subject have spoken of serial microscopic sections and yet it is hardly necessary to bring forth evidence to show how essential for the study of such a minute object is the study of serial microscopic sections. In order to determine the relationship of the hymen to surrounding structures the serial sections that I made in my six cases included the entire pelvic organs.

There are four main theories as to the development of the hymen.

(1) The *vulvar* theory according to which the hymen is a fold originating from the vulva or sinus urogenitalis. This is based almost entirely upon consideration of certain rare conditions such as the presence of a hymen in absence of the vagina. The hiatus of time between the discovery of these anomalies and the development of these fetal structures is so great that an infinite variety of interpretations is open in each case. Such anomalies may be used as corroborative evidence but by no means as proof of a particular method of development.

(2) Another theory is what I have termed the *bilammellate vulvo-vaginal* theory. According to this, one fold of the vulva and one of the vagina coalesce to form the hymen. That such an apparent double hymen is occasionally found is true but my interpretation is a different one, as will appear later.

(3) A third theory, the one at present accepted by most anatomists, is that the hymen develops from the membrane left at the point where the Muellerian ducts enter the urogenital sinus. This I have called the *uni-lammellate vulvo-vaginal* theory. According to it one side of the hymen is composed of vaginal, the other of vulvar tissue. There is ample evidence at hand to show that at the point where vagina and vulva meet, through the bulbous proliferation of this portion of the vagina there is formed a fairly well developed membrane. It is likewise true that it is at this point that the hymen develops. What is lacking proof however is that this first membrane and the hymeneal membrane are the same structure or that the latter develops from the former.

(4) Finally, we have the *vaginal* theory as whose chief exponent is von Dohrn. Von Dohrn believes that the hymen is formed after the breaking through of the coalesced Muellerian ducts into the urogenital sinus and at a point further up in the coalesced ducts. It is this last named theory that is supported by the evidence of my cases.

And yet my views are by no means a repetition of Von Dohrn's, for they involve the interpretation of certain structures which were not recognized by him and to a great extent explain the great divergence of

opinion heretofore. I found namely that in embryos of 16-18 cms. length, at the point where the Muellerian ducts break into the urogenital sinus there is at times a well defined fold such as is described by Nagel as the hymen. There is at this time no decided connective tissue proliferation. Immediately following this stage, in embryos of 20-22 cms. length such proliferation takes place. One long fold of vaginal tissue projects just internal to the fold at the entrance until the vaginal lumen is almost wholly closed at this time. This is not merely a fold such as the one in the 16 cm. embryo was but is a thick well-defined membrane. In later stages, 28-30 cms. embryos, the original fold can still be distinguished extending from the dorsal side of the vulvo-vaginal opening but it is now proportionately very much smaller so that it might readily be overlooked beside the fleshy membrane of vaginal origin lying further inward, the true hymen. There are at this time no secondary papillæ or folds such as are to be found in the vagina of the full-term fetus, so that it could not be said that this structure which I take to be the hymen is merely such a secondary fold or papilla. It is a thick fleshy occluding membrane, the only such membrane found. As further proof that it is purely vaginal in origin is the fact that even at birth it is lined on both sides by the same vaginal epithelium. The difference in the character of vaginal and vulvar epithelium will be evident from the illustrations. The connective tissue fibres which go to make up the hymen are directly continuous with the vaginal connective tissue fibres and are in no wise associated with the vulvar connective tissue. Finally, the hymen has papillæ on both sides and the edges of its orifice or orifices are often irregular, as you would expect in a membrane resulting from a proliferative process but such as you would *not* expect in a membrane resulting from a ringlike dilatation.

THE ROENTGEN RAY AS AN AID TO THE DIAGNOSIS OF
TUBERCULOSIS OF THE LUNGS, WITH DEMONSTRATION
OF SKIAGRAMS AND NEW ORTHODIASCOPE.

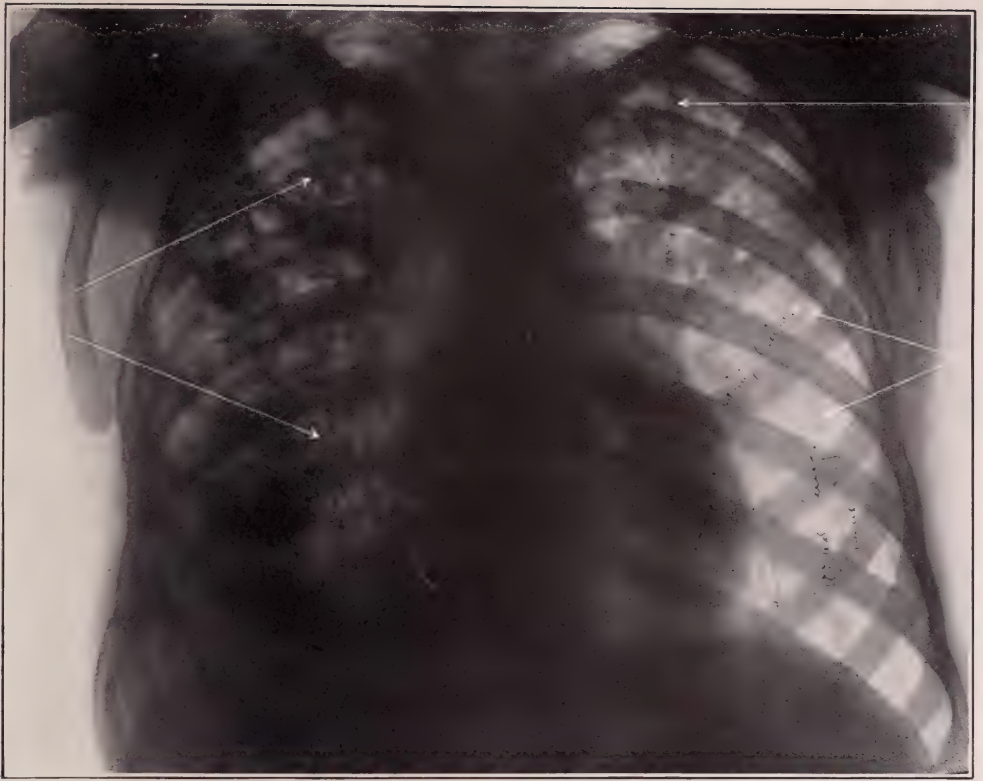
By WILLIAM ENGELBACH, M. D., and R. D. CARMAN, M. D., of Saint
Louis, Missouri.

The value of the Roentgen ray as an aid to the diagnosis of pulmonary tuberculosis is not generally recognized. In fact, it has only been during the last few years that the rapid development of technical roentgenology has made its application of practical value in the diagnosis of tubercular and other pulmonary diseases.

Outside of the organs contained in the mediastinum, the normally air-filled lung and vacuum pleura are very pervious to these rays, and therefore gives a shadowless skiagraph. Tuberculosis, as well as other diseases of the lung, causes more or less structural change either increasing or decreasing the air-contents of the lung, thereby producing a variation of the normal density of these tissues. The gradual perfection of technique enables the expert roentgenologist to show an exquisitely fine differentiation of approximated tissues varying even to the slightest degree in density. These lesions, therefore, causing sufficient variation in density from the normal, can now be demonstrated by the skiagraph and fluoroscopic screen. Whether roentgenology can give a positive interpretation of the etiology and the pathology of those lesions which it is able to define and locate is yet an open question. That tubercular shadows have more or less definite characteristics, however, will be demonstrated later. Besides these shadow findings, skiagraphy is able to demonstrate very accurately any abnormality in the movement of the chest and in the change in the shape, size and position of its organs. This evidence in itself has only an indirect bearing upon the diagnosis of tuberculosis, and is helpful as a secondary sign indicating some primary tubercular lesion which in itself may not be demonstrable with the x rays.

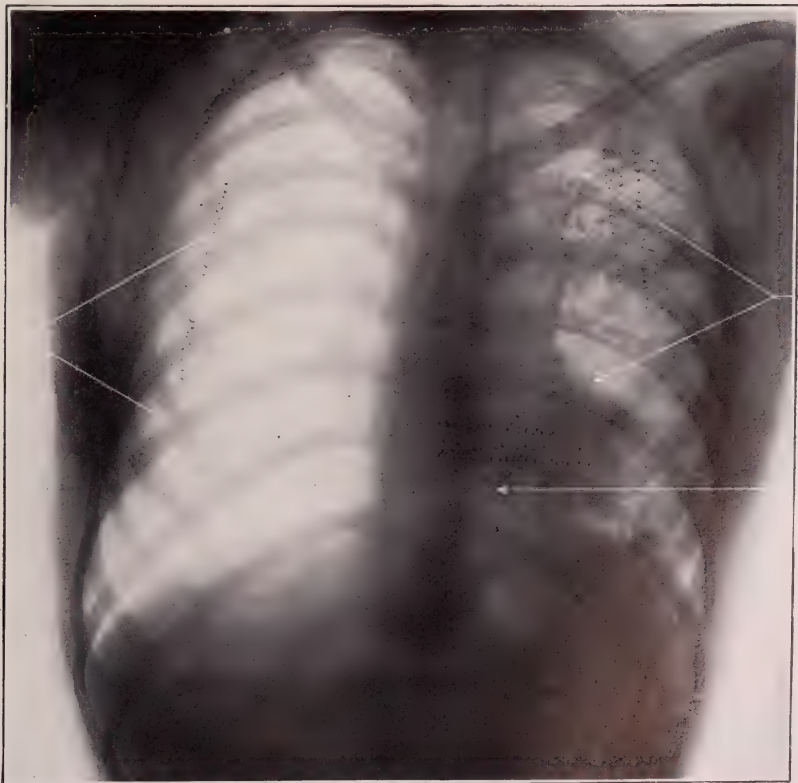
The importance of the proper interpretation of the x ray findings in these conditions is of necessity absolutely essential. The technique must be expert and obtained with the most improved modern equipment; for instance, the picture must be made in the shortest possible time, i. e., one to five seconds, etc. These skiagrams, perhaps more than any other, require years of experience and close application of controlled diagnosis for their proper interpretation.

In giving the following summary of this application of skiagraphy, with the demonstration of skiagrams of these conditions we make no claim for originality, but merely attempt to select from the works of Holzknecht, Shoenberg, Kassabian, Rosenthal, Hickey, Willey, and others,



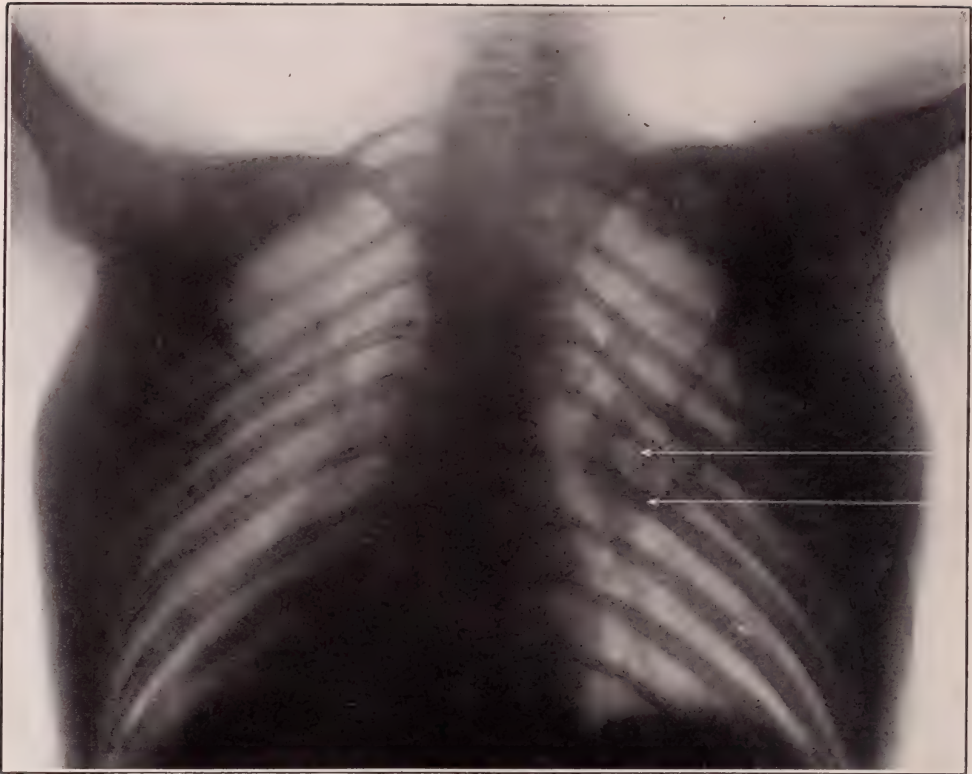
Bilateral infiltration second stage tuberculosis.
(Radiograph by Vernon J. Willey.)

1. Entire right lung, diffuse infiltration.
2. Infiltration of the entire left upper.
3. Early infiltration.



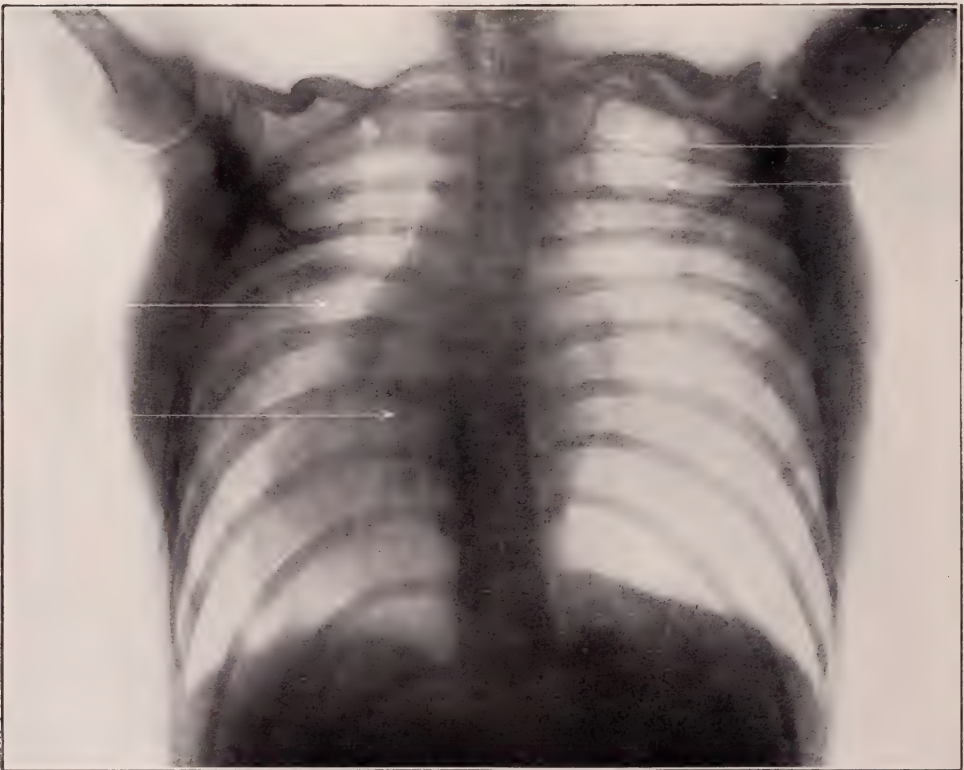
Second stage tuberculosis. (Radiograph by Vernon J. Willey.)

1. Pneumothorax with depression of diaphragm and displacement of heart to the left.
2. Diffuse infiltration of entire left lung.
3. Heart shadow indefinite on account of infiltration in the left lung.



1
2

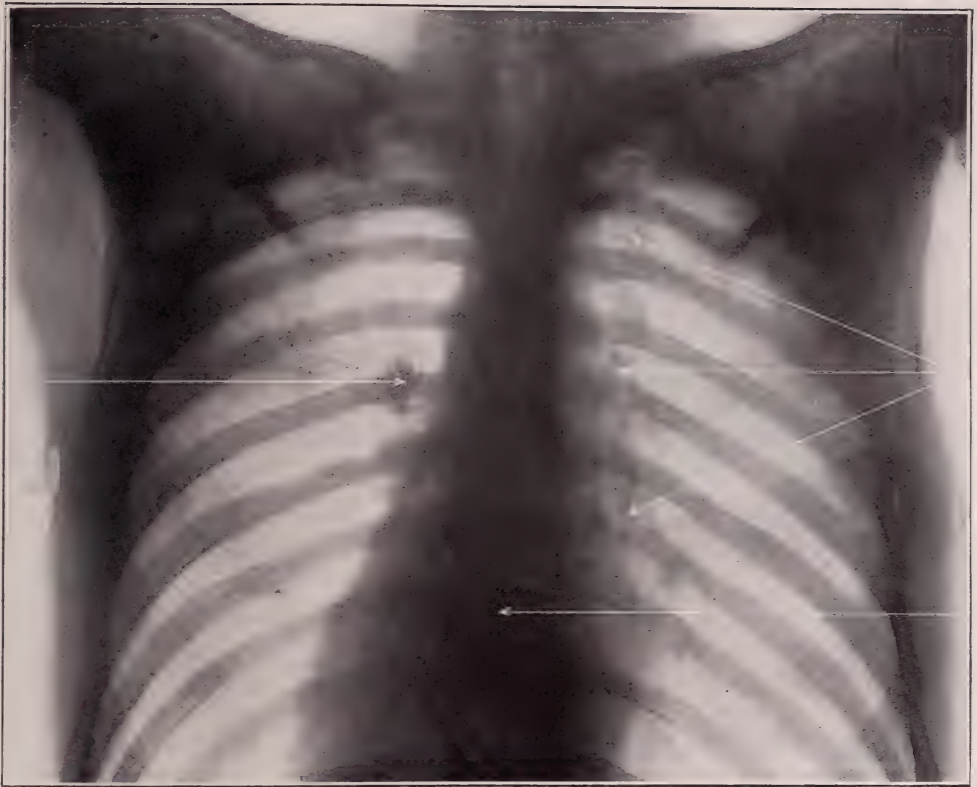
Small cavity in the base of the right upper lobe.
1. Cavity partly filled. 2. Cavity wall.



1
2

4
3

Cavity in the right upper apex.
1. Empty cavity. 2. Cavity wall. 3. Heart shadow. 4. Beginning infiltration.



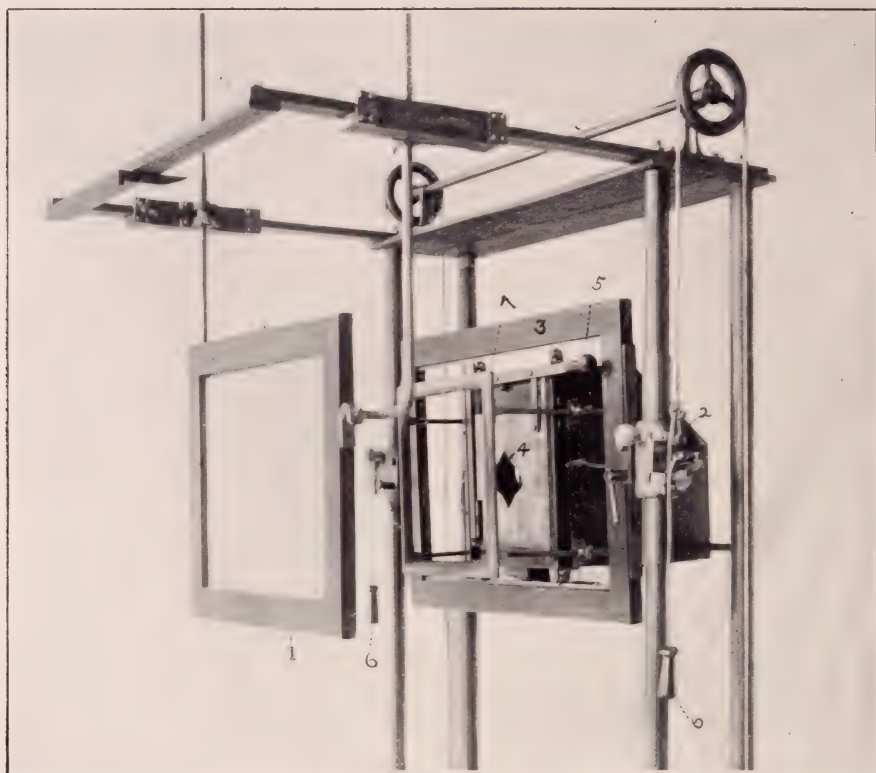
Tubercular (?) lymphadenitis. Lungs normal.

1. Calcified lymph gland. 2. Parabronchial thickening. 3. Heart shadow.



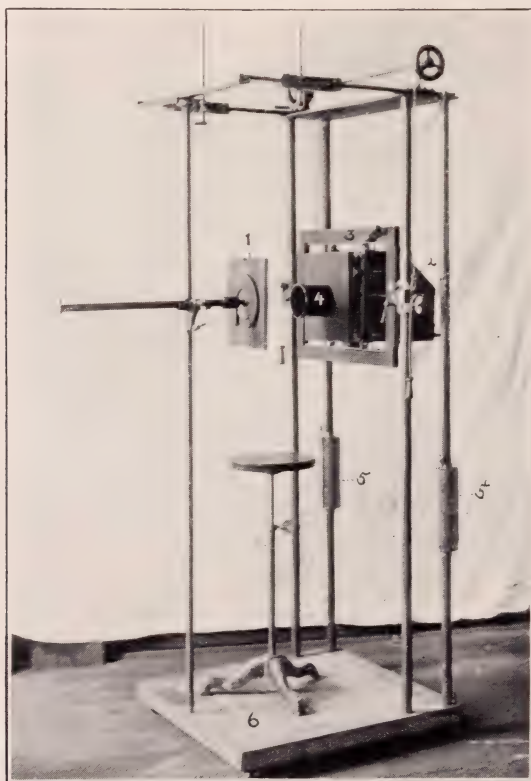
Aneurysm.

1. Normal lung tissue. 2. Aneurysm of the descending thoracic aorta.
3. Arch of the aorta. 4. Heart shadow.



New Orthodiascope.

1. Fluorescent screen mounted with lead glass.
2. Opaque box.
3. Supporting frame.
4. Adjustable shutter.
5. Handle to shutter.
6. For moving box laterally.
7. Compression frame.



New Orthodiascope.

1. Plate holder.
2. Opaque box for x ray tube.
3. Supporting frame.
4. Compression diaphragm cylinder.
5. Counter-weights.
6. Base.

some of the important principles of their art which are of practical value at least as confirmatory evidence in the diagnosis of tubercular conditions. In this summary the findings of fluoroscopy, skiagraphy and orthodiagraphy will be given without special mention of the technique or methods used.

Tuberculosis of the Pleura. On account of the large percentage of diseases of the pleura being tubercular in origin, and the frequent association of these diseases with pulmonary tuberculosis, they are considered an appropriate part of this article. Abnormal collections of free fluid or air in the chest cavity produce such a marked change in its density as to be very easily observed with the fluoroscopic screen or skiagraph. Pleurisy with effusion, although readily diagnosed by ordinary physical findings, is sometimes, when encapsulated or intra-lobular, difficult to differentiate from plastic pleurisy, lesions of the lung, displacement of abdominal organs, etc. Large effusions also often present the signs of complete consolidation of the lung with or without an obstructed bronchus, and are also frequently mistaken for a diffusely thickened pleura, or vice versa. These conditions are easily differentiated by a simple fluoroscopic examination. The x ray shadow of an effusion of the chest is denser than that produced by any other thoracic condition. This shadow is of an even, diffuse, dense opacity, and has, when the fluid is not too large or encapsulated, the hydrostatic properties of seeking its own level. The rib shadows are less distinct than on the opposite side. When the effusion is at the base of the lung it usually obliterates the shadow of the diaphragm and fuses with the shadow of any adjacent solid organ. The compressed atelectatic lung tissue above the effusion is denser than the corresponding normal lung of the other side. Displacement of the heart shadow takes place more markedly when the fluid is on the left side. This displacement, however, is one of the entire mediastinum with no marked abnormal relationship of the base to the apex of the heart. The movements of the diaphragm are restricted, depending upon the amount of the fluid. In contrast with these skiagraphic findings a thickened pleura produces a shadow of only a very slight veiling of the effected side, depending upon the extent of the lesion. This shadow is irregular in outline, very unequal in opacity, and without the slightest mobility. The ribs are closer together, the pleural cavity is decreased in size, and curvature of the spine and decreased movement is usually present in old contracture. Empyema gives findings very similar to pleurisy with effusion. There is usually more marked displacement of organs, and sometimes diffuse undulations or pulsations are observed with the fluoroscope. Kassabian says the shadow is the same as that of effusion except when edema of the chest wall accompanies the empyema which increases the opacity. It is, therefore, questionable whether differential diagnosis can be made between the pleurisy with effusion (serous, serofibrinous or hemorrhagic) empyema, hydrothorax, hemothorax, etc. In intra-lobular empyema, a

localized shadow corresponding to the intra-lobular fissure is presented. Differentiation of this condition from encysted empyema, cavity or abscess of the lung, is sometimes difficult by the skiagraph alone. There is no marked displacement of organs in the localized empyema, and it is rarely surrounded by a darker margin as is abscess or cavity of the lung. Diaphragmatic pleurisy produces a localized shadow at the base of the lung which obliterates that of the diaphragm, and consequently diaphragmatic movement is almost completely restricted. Subphrenic abscess causes a displacement upward of a motionless diaphragm, and usually some displacement of the heart, with the adjacent lung tissue above the diaphragm darker than normal. Sometimes the upper level of the shadow below the diaphragm is mobile on shaking the patient.

In pneumothorax the majority of cases of which are tubercular the skiagraph is a perfectly clear space of an enlarged half of the chest showing only the ribs in marked contrast with a light shadow caused by the air within the pleural cavity. In the upper internal angle of the affected side there is a shadow darker than the corresponding lung of the opposite side, which is cast by the retracted collapsed lung. The diaphragm is in a low position, its movements are greatly restricted or absent, and the mediastinum is usually displaced towards the non-affected side. The heart is usually markedly displaced and produces a very clear cut dark shadow on account of the contrast of the air-filled pleura. In hydro- and pyo-pneumothorax there are three different shadows on the effected side. The collapsed lung is shown by the upper internal shadow of a dark, hazy nature, sometimes containing a more solid dark tubercular area. Beneath this is a bright space produced by free air in the pleural cavity, and at the base of the thorax there is a dark uniform fluid shadow having hydrostatic properties and sometimes pulsating. Movements of the diaphragm are usually obliterated, and the displacement of organs is the same as observed in pneumothorax.

Tuberculosis of the Lungs. Second and third stages of tuberculosis of the lung produce very positive skiagrams. Cavities are usually very easily diagnosticated. An empty cavity produces a lighter area surrounded by a dark margin. Filled cavities give the same findings as consolidated areas, that of an irregular dark shadow. This dark area, however, usually becomes lighter after the patient is induced to empty the cavity by coughing, change of position, etc. This latter change of opacity differentiates it from an infiltration of the lung, tumors, cysts, encapsulated empyema, etc. A dilated bronchus surrounded by an infiltrated margin is frequently impossible to differentiate from a cavity, although its shape, form and number is a help in drawing conclusions. The findings in gangrene and abscess are practically the same as those of cavities, but are easily differentiated by the other methods. The x ray findings in these conditions producing cavity formation are of importance on account of accurately demonstrating their size, number and location.

Second stage tuberculosis consisting of infiltration or consolidation with or without beginning cavity formation is also very easily diagnosed by this means. The shadows produced by these lesions are more or less diffuse shadows having a marked variation in opacity, depending upon the amount and density of the lung tissue involved. They are characterized by their non-uniform opacity. In contrast with the shadow produced by consolidation of pneumonia, which is a lobar, uniform homogeneous shadow, these shadows vary considerably, presenting a more or less unequal, spotted appearance within a lighter shadow. They are usually located at the apices, not limited to a lobe, non-mobile in character, remain constant after expectoration, change of position, etc., are not as densely dark as a fluid shadow, but are much deeper in color than that of an adhesive pleurisy. They are differentiated from infarcts by being more irregular in density and shape, and not located at the periphery of the lung. They differ from atelectetic areas by not disappearing after coughing and forcible breathing. Other conditions such as tumors, cysts, echinococcus, actinomycosis, and blastomycetis of the lung produce circumscribed areas varying in opacity, which are difficult to differentiate from tubercular shadows by the skiagram alone. Malignant growths frequently pulsate in one direction, which is exceptional with tubercular consolidation. Aneurysms are easily differentiated by the expansile pulsation in more than one direction. We have found that in this stage of tuberculosis the x rays have given a more accurate diagnosis of the extent of the lesion than physical examination.

First Stage Tuberculosis. The earliest tubercular shadows demonstrable by the x rays are small, hazy, darkened spots, depending for their distribution upon the extent of the lesion. Multiple lesions show a mottled appearance of the affected lung. In comparing the physical with the radioscopic findings of incipient tuberculosis (cases upon which no positive findings could be demonstrated), Dr. Carman and myself have found the skiagrams very helpful. We believe in the very earliest cases that it is impossible to make a positive diagnosis upon the skiagraphic findings alone, but the characteristic x ray findings taken with the suspect physical and clinical findings warrant a positive diagnosis in a majority of these incipient cases. The non-tubercular conditions which might possibly produce either suspect, physical, clinical or x ray findings are usually excluded by a combination of these findings. Other conditions which usually give confusing x ray pictures simulating incipient tuberculosis are interstitial pneumonitis, beginning bronchiectasis, atelectasis and anthraxis. The normal thorax usually gives a chain of small shadows along each side of the sternum which are produced by para-bronchial glands, bronchi and blood-vessels. These shadows are frequently mistaken for tubercular shadows in the lungs. From these shadows there frequently radiate streaked, fading lighter opacities, which have been considered the findings of para-bronchial pleural

thickening. Enlargement of these glands produces a distinct fusing of these normal shadows causing an irregular more or less opaque shadow in this location. Calcified tubercular lesions usually cast very sharp, small shadows which are difficult to differentiate, however, from anthroctic particles in the lymph glands and lungs. We have not found the vertical position of a small heart a very constant or helpful sign as an indication of incipient tuberculosis. William's diaphragm phenomenon, *i. e.*, the restriction of the movements of the diaphragm on the affected side, has been disqualified by a number of investigators as of any value in the diagnosis of incipient tuberculosis. They have demonstrated that this phenomenon was not present in the majority of positive tubercular cases.

Conclusions. The x ray examination is a very valuable adjunct to the diagnosis of tuberculosis of the lungs for the following reasons:

(1) Many of the indefinite anatomical conditions of the pleura are easily demonstrated positively.

(2) The lesions of third stage tuberculosis (infiltrations and cavities) are diagnosticated positively as to size, number and location.

(3) The extent of known tubercular lesions of the second stage (infiltration and beginning lesions) are demonstrated more accurately than by physical findings alone.

(4) Combined with the clinical and physical findings it affords valuable evidence in the diagnosis of a majority of the cases of incipient tuberculosis.

REPORT OF CASE OF ABDOMINAL PREGNANCY.

By C. M. NICHOLSON, M. D., of St. Louis.

Mrs. S., married, age 42 years, referred to me by Dr. Wm. West, was admitted to the Rebekah Hospital, May 8, 1907. Menstrual period had begun when she was 14 years old, and had been regular except during pregnancy and lactation.

Patient's previous history had been good. Eight months since she menstruated the last time, and with cessation of menstrual period she supposed herself pregnant though had felt perfectly well in every way until three months ago when she complained of a pain in the right iliac and lumbar regions. On admission she was found to be in fair condition. Heart, lungs, and kidneys normal, abdominal walls thick, abdomen prominent, palpation showed irregular swelling, mostly to right of median line, reaching from the lower margin of the liver to within one and a half inches of the pubes. Dullness over the tumor, resonance in flanks, tenderness on manipulation. Vaginal examination showed cervix was slightly enlarged; a mass, soft and elastic, could be felt on the right side.

After having been anesthetized and an incision made from the margin of the ribs to Poupart's ligament, a dead fetus was exposed when the peritoneum was divided. Head below, back to the right. The liquor amnii was small in amount, and the sac was adherent to the mesentery and omentum. The adhesions were rapidly separated and the fetus lifted out of the cavity. Up to this time all had progressed without difficulty, but when the placenta, which was attached to the intestinal wall, was removed the bleeding was furious; the cavity was packed with sterilized gauze and the bleeding controlled, but on removing the gauze the bleeding returned. Five yards of sterile gauze were left in the cavity and the lower two inches of the incision left open. A part of the packing was removed on the third day and the balance on the fifth day.

Embryo: Female, age 125 to 130 days, length 128 mm. This age is based on the length in mm. as formulated by Mall, viz., that in "embryos from 100-200 mm. long the length from the crown to rump in millimeters equals the age in days." The embryo has also been carefully compared with an embryo described by Minto of a known age of 123 days and in every particular it compared closely.

The weight, after formaline hardening, is 174 gms. Since there was some shrinkage the weight is probably considerably less than when fresh. The table by Fehling gives 120 grams as the average weight for an embryo of 4 months, and 285 gms. for an embryo of 5 months. So that the weight is probably something under that of a normal embryo of four and one-half months. The embryo is normal in all respects except that

the thumb on the right hand presented an undeveloped and abnormal condition.

The length of the umbilical cord 260 mm., which is somewhat shorter than is usual in this stage of development. The fetal portion of the placenta was smaller than is usually found at that age, and its vascularity was decidedly less than normal.

Convalescence was uneventful. Primary union took place throughout the wound except at the point where the gauze drain had been removed.

Patient left the hospital well, in four weeks after operation.



FIG. 1. Showing position of foetus and placenta.

Abdominal pregnancy has been known for the past eight centuries. Albucasis discussed the subject during the eleventh century as did Polinus and Cordaeus four hundred years later. Horstius during the sixteenth century, related the history of a woman who conceived in March, 1547, and the remains were still in the abdomen in 1563. During the past two centuries the subject has received the attention of medical observers generally.

The method in the human by which the ovum gains access to the tube, after escaping from the ruptured follicle, is a question of interest and one which has given rise to endless discussion.

The process is clearly understood in those animals where the ovaries are completely, or partly, enclosed in a peritoneal sac, into which the tube opens; but in women, and in animals in which the ovary projects freely into the peritoneal cavity, no satisfactory solution of the phenomena has as yet been obtained.

Numerous theories, explaining the manner in which the ovum enters the tube, have been advanced, the one most generally accepted being that the cilia upon the fimbriated end of the tube cause a current in the capillary layer of the fluid which lies between the various pelvic organs, so that the ovum, on escaping from the follicle, is taken up by the current and wafted towards one or the other tubes, whence it is carried to the uterus.

Pinner injected cinnabar and Lode the ova of ascarides, into the peritoneal cavity of animals and found that they made their way into the pelvis where they were taken up by the tubes through which they were carried into the uterus.



FIG. 2. Showing abnormal position of thumb on right hand and points of attachment of placenta to intestine.

Not infrequently, in animals possessing bicornate uteri, one finds, according to Bischoff, that the corpora lutea are in one ovary, while the embryos are developed in the uterine horn on the opposite side. Kussmaul first studied the possibility of such an occurrence in woman. He stated it might occur in two ways: 1. By the ovum passing down one tube, traversing the uterine cavity and then making its way up the opposite tube; 2, by making a circuit through the pelvic cavity and thus gaining access to the opposite tube. While we are unable to ascertain how frequently the latter takes place in normal uterine pregnancies, it is probably by no means rare. Should the ovum be arrested in its circuit through the pelvic cavity, its development can be explained by the fact that decidual cell formation occurs almost constantly in not gravid organs of a pregnant woman, independent of the location of the imbedding of the ovum.

Furthermore a change of connective tissue cells into decidual cells is effected not only in the mucosa of the inner genitals, but also in the surrounding serosa.

This was first found in extrauterine pregnancy. Walker described decidual cells in two cases of abdominal pregnancy in the peritoneum of the excavatio rectouterine and the posterior uterine wall. Dobbart found the same condition in a case of abdominal pregnancy. In tube pregnancy, decidual proliferations were described by Dobbart, Zweifel and Zedal. The first one who found these changes in the peritoneum in intrauterine pregnancy was Pelsleusden. Later Schmorl found decidual proliferations so constantly in over 70 cases of intrauterine pregnancy that he speaks of a physiological decidual pregnancy reaction of the peritoneum. He describes in the excavatio rectouterine, as well as along the posterior wall of the uterus, and the ligamenta lata, small macroscopically discernible, tubercle like, little knots which contain decidual cells. These proliferations also occur sometimes as filamantous formations; sometimes they extend plate-like over large regions. On the surface of the ovaries the changes were found by Kinoshita, Josefson, and Lange. Schnell and Lindenthal confirm the presence of decidual cells in the ovaries.

Much more surprising than these decidual changes in the peritoneum of the genital organs in pregnancy, are such in extragenital organs. Walker found very pretty instances of decidual proliferations on the serosa of the posterior wall of the bladder. Schmorl and Kinoshita found the same on the interior wall of the rectum. These findings appear to be plausible, as the bladder and rectum are connected with the genitals by the peritoneum. This connection can also be effected with other intra-abdominal organs by means of pathological formation of adhesions, whereby the adhesions serve, like bridges, for the propagation of the irritation of pregnancy and decidual proliferation. Into this class belong the observations of Schmorl and Lange, who showed decidual changes in the serosa of adherent intestinal loops. Similarly Prochownic found decidual cells in the large mesentery, which had formed a connection with a fallopian tube. In an exhaustive paper Wuhr arrives at the following conclusions:

Decidual cell proliferations occur in any kind of gravidity in the peritoneum of the pelvis. They may be observed microscopically in the form of nodules, fibrils or plates.

Decidual cell-proliferations in pregnancy also occur in the peritoneal covering of the organs in the large pelvis and the abdominal cavity. So far they have been observed in the small intestine, the large mesentery, and the vermiform appendix.

For a part of these cases there exists direct relation by means of peritoneal-adhesive junction with the ovary and respective chorion; but for another part, we have to deal with direct distal effect of gravidity in the proper sense of the word.

The decidual cell proliferations as derivatives of connective tissue cells of the serosa are principally to be distinguished from proliferated, hypertrophic peritoneal endothelium. The latter are observed in productive inflammations of the peritoneum of any etiology, as well as in histologically similar processes of organic changes after hemorrhages in the peritoneal cavity.

Hypertrophic peritoneal endothelia in gravidity, therefore, have, even in spite of superficial similarity with isolated decidual cells, nothing in common with either the latter nor the specific distal efforts of pregnancy as represented by the genuine decidua.

Undoubtedly a large per cent. of abdominal pregnancies are secondary, that is, follow tubal pregnancy, which terminate either by abortion or rupture of the tube. Orthmann says that by abortion is meant a premature interruption of pregnancy. The causes of tubal abortion are either contraction of the tube or the loosening of the attachments of the ovum by hemorrhages. Prochowink says: "Rupture is often if not usually secondary to abortion."

Duhressen believes that rupture frequently occurs after the death of the ovum. He divides the varieties of rupture into five classes: 1. Rupture with a living fetus, the rupture being caused by the progressive growth of the ovum. (The other four classes occur after the death of the embryo.) 2. Bleeding into the fetal membranes, frequently causing such great increase of pressure as to produce rupture of the thinnest wall of the tube. 3. Free bleeding into the tube, without means of exit, i. e., adhesion of ostium abdominale to the ovary. 4. Bleeding between the decidua serotina and the ovum with a strong reflexa. 5. Overstretching of the pregnant part of the tube, brought about by contraction of the uterine end of the tube while the abdominal end is fixed by adhesions. No. 2 occurs with a patent ostium abdominale.

Aschoff says that ruptures, caused by the destruction of the tube wall by the growing villi, are common, but are often unnoticed, being concealed by blood clot, and later by fibrin and connective tissue. He does not consider the presence of blood in the intervillous space to be pathological. He considers abortion to result from rupture of large vessels whose walls have been weakened by an invasion of fetal cells. He points out that the vessels are larger and have less support in the tube than in the uterus, there being no surrounding decidua. The rupture is caused by increase of blood pressure, due, he thinks, in many cases, to menstruation. Tearing of the pseudo-reflexa he considers another frequent cause of abortion. All early ruptures are necessarily in the part of the tube wall where the placenta is attached. Abortion and rupture are both due to the same thing,—destruction of the maternal tissue by the proliferating cells.

Ulesko Stroganowa, in 1900, considered that the poor development of Nitabauch's fibrin is the cause of bleeding into the ovum. She points out also, as does Aschoff, that rupture is more common than most authors

assert, small ruptures on the placental site, due to destructive action of villi, being often patched up by blood clots. Large ruptures, due to stretching of tube wall, she considers, are usually outside the placenta site.

Heinsius, in 1900, considered that gradual rupture into the lumen of the tube, i. e., abortion, may be prevented, for a time at least, by layers of fibrin in just the same way as has been described by Aschoff and Ulesko Stroganowa in concealed ruptures on the peritoneal surface. Whether rupture shall take place abortion is determined by the direction in which is the most marked proliferation of fetal ectodermal cells, i. e., it depends upon which wall is more thinned, the partition sheet or the wall of the tube. Usually for rupture to be brought about, there must be a sudden increase of pressure, e. g., by opening a large vessel, which increases the size of an already existing opening in the tube wall. Secondary ruptures may occur in a tube in which abortion has already taken place. Contractions of still active muscle may lead to abortion by tearing the partition sheet.

The termination of extrauterine pregnancy varies, either the fetus is extracted by operation, delivered alive by abdominal section, putrifies and is partially absorbed, ulcerates the confining walls entering the bladder and bowels, through which the remnants are discharged, or carried indefinitely in the abdomen in the form of a lithopaedion. One that develops to term or near term is a clinical rarity.

Werder has collected records of forty cases of ectopic gestation delivered alive. Of these, 18 died the first week, five the first month, and one at six months from bronchopneumonia, one at seven months from diarrhea, 2 in 11 months from croup, one at 18 months from cholera infantum, thus leaving 14 to be accounted for; of these, five were reported living and well after operation, one after three weeks, one after six months, with no subsequent report. Two alive and well at one year, two at two years, and one at fourteen and a half years.

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INSTRUMENTAL UTERINE PERFORATION.*

By A. G. SCHLOSSSTEIN, M. D., of St. Louis.

Perforation of the uterus produced with an instrument is by no means a rare occurrence; there are a great many such accidents recorded in the literature on this subject and I think a great many more are never reported.

Some time ago I had occasion to observe the following case at the operation. Mrs. ———, age 31, married 10 years, consulted a colleague of ours on July 1st, 1905. She thought herself pregnant and stated the impregnating intercourse had taken place on June 8th. Patient consulted the doctor on account of the pernicious vomiting, from which she had suffered during previous pregnancies. Previous health had been good. She menstruated first at 15 and menstruation had been regular and normal since. This is her sixth pregnancy and she claims to have suffered from pernicious vomiting during each of the previous pregnancies. The vomiting usually began almost at the beginning of the pregnancy, so that she had borne no child to term, but that each time artificial abortion had become necessary. The abortion had been produced between the third and seventh weeks, always by the same physician,—she had never been pregnant more than seven weeks.

There is no history of specific infection; patient is of a very nervous disposition. Examination revealed nothing abnormal about the pelvis or uterus; cervix softened somewhat. Patient suffered from occasional nausea, otherwise her condition remained normal until September 27th. Towards the end of this time she became more nervous and, although she was apparently anxious to have a living child, she seemed very much afraid of the delivery at full term. Her appetite became poor and on September 27th she vomited for the first time. This was about the fifteenth to sixteenth week of the pregnancy. Her general condition was good, temperature normal, pulse 72, of good volume, and there was no prostration.

During the following days she vomited more frequently, four to five times daily, in spite of the therapy employed. Her general condition remained good until October 2, the fifth day after beginning of vomiting. The patient and her family were very anxious to have the pregnancy terminated, and for that reason another physician was called in consultation. The consultant agreed with the gentleman in charge of the case that interference was not yet indicated.

*Read at the meeting of St. Louis Obst. & Gynaec. Society, Oct. 10, 1907.

By the next day, October 3, the patient's condition had taken a turn for the worse and so the doctor proceeded to empty the uterus that afternoon, the seventeenth week. The doctor tells me the patient was very weak, sensorium cloudy and for that reason hypodermoclysis of 600 cc. normal saline solution, and strychnine hypodermatically, were at once administered.

Then in ether anesthesia he proceeded to empty the uterus at one sitting. After rapid dilation of the cervix the membranes were ruptured with a pair of placental forceps, the fetus extracted piecemeal, and the placenta removed with a large loop curette. While using the curette the doctor suddenly noticed some tissue at the external os, which, upon close examination, proved to be omentum. This was immediately replaced and a strip of gauze introduced into the uterus. Now the patient was hurried to the hospital, a distance of about sixteen blocks. There I saw her for the first time and assisted at the laparotomy.

After opening the abdomen in the median line, we found a tear in the uterine wall on the right anterior aspect, just to the outside of where the peritoneum becomes attached to the uterus and about midway between the attachment of the round ligament and the level of the internal os. The tear was between $\frac{3}{4}$ and 1 inch in length. The gauze that had been introduced into the uterus was protruding through the tear and had raised the anterior layer of the broad ligament. This peritoneal layer also showed a tear, but this was smaller than the one in the uterine wall and the operator was obliged to enlarge the peritoneal opening to get at the uterine wound. There had been very little bleeding. The hole in the uterus was closed with a double layer of catgut sutures and the peritoneal wound by means of a Lembert suture. The uterine wall was very soft and the sutures cut through easily. The abdomen was closed by the customary layer suture method.

The patient was extremely weak. She was given another hypodermoclysis of 600 cc. normal saline solution and heart stimulants hypodermatically, but she remained unconscious and died the next morning.

Sometimes perforation of the uterine wall is produced in spite of the greatest caution in introducing instruments and when no force at all is used. Such cases have been reported by a number of authors. At times the operator encounters a slight resistance which is offered by the peritoneum. This is true especially in regard to the pregnant uterus, but even with the non-pregnant organ it can happen that, during the curettement, the sound or curette is pushed through the uterine wall. In these cases one usually finds the uterus very soft and boggy. As causes of this abnormal softness of the uterus, predisposing to such easy perforation, Fritsch mentions atrophy, anemia, tuberculosis and malignant and benign tumors of the uterus. But even when none of these conditions exists, one occasionally finds the uterine wall very soft and boggy. Chrobak reports a case in which, upon cleaning out an incomplete

abortion, he found muscle fibers firmly adherent to the membranes, and expresses the opinion that in such a case one might very easily perforate the uterus. Halban reports a case in which he extirpated the uterus after perforation and found large dilated veins in its walls, which had made the tissue very soft and spongy.

Some years ago von Guerard and Schulze-Vellinghausen, of Düsseldorf, took up the pathological anatomy of these cases, and claim to have found typical microscopic changes. They examined uteri which were not in a state of puerperal involution. Unfortunately their examinations embraced too few specimens to allow of our deriving definite conclusions from their report. Schulze-Vellinghausen examined two uteri microscopically which had been extirpated following perforation during curettement. He reports as follows: The most striking change in all specimens, and especially in those sections taken from the fundus near the site of perforation, was cedema of the tissue and separation of the individual muscle-bundles. This was less marked in sections further removed from the fundus, and in the cervix he found almost no cedema, but an increase in the amount of fibrous tissue. Besides this he found a change in the vessel walls, a thickening of the muscular layer, the tunica media, also some thickening of the intima or adventitia,—more of the latter (this is called by some authors, sclerosis of the uterine arteries).

He claims this condition of the vessels is responsible for the pathological process.

We all know that in the pregnant or puerperal uterus the consistency of the uterine wall may vary; we have either firm contraction, or relaxation of the muscle. Some authors claim this difference in consistency also exists in the non-pregnant uterus.

There has been quite a difference of opinion between Strassmann and Kossmann about what they term "paralysis of the non-pregnant uterus." With this term, Kossmann designates an extreme relaxation of the uterine wall and an increase in the depth of the uterine cavity. For instance, a uterus whose depth was 7 cm., suddenly measured 9-10 cm. or more. Strassmann does not admit the existence of such a condition, but claims in these instances a perforation has been produced. It seems to me, we can subscribe somewhat to this relaxation theory but of course always within bounds.

In some instances where the sound has penetrated far into the uterus it has found its way into the Fallopian tube. Such cases have been described by Ahlfeld, Flueckinger and Jabreiss. Still, instances of positively proven tube-sounding are rare; many cases described as such were in reality perforations of the uterus, where the sound passed through the wall laterally into the tissue between the layers of the broad ligament.

The most frequently perforated portion of the uterine wall is at the junction between the cervix and body of uterus on the posterior wall.

Injuries of the cervix, due to instrumental dilatation of the cervical canal, are somewhat more frequent than perforation of the body, but lesions of the body wall, caused by Hegar (Hank's) dilators have also been reported. Brouardel reports a case in which a Hegar dilator slipped from the operator's fingers after perforation, and was later found in an abscess pointing above the pubis. Tents employed to dilate the cervix have also caused uterine perforation.

Kuestner reports two cases which demonstrate that perforation of the uterus is often not diagnosticated as such at the time it occurs. These patients had been curetted by some one else, and Kuestner later found omentum in the uterine cavity, which had become adherent there. In another instance Strassmann found scars on a uterus which he claims must be the remains of former perforation, the woman having previously submitted to gynecological examination and treatment.

The greatest care is necessary in all manipulations about the uterus to avoid perforation. One should always ascertain the depth of the uterine cavity as exactly as possible. In dilating the cervix the point of the dilator should be carried very little within the inner os. Pointed instruments should not be used, rather those with blunt, thick ends. In cleaning out an incomplete abortion it is dangerous to use the dressing forceps; rather use a placental forceps; while curettes are to be used as little as possible, and then only broad, dull curettes.

It would carry me beyond the scope of my subject to discuss the several methods of cervix dilatation. The prognosis in cases of perforation is good if the instrument is clean and the uterus not infected.

When perforation has taken place the treatment may be expectant or operative. If expectant, one should introduce a strip of gauze into the uterus, confine the patient to bed and apply an icebag to the lower abdomen. Every case must be decided for itself, i. e., whether to operate or not. Some authors advise operation in every case of perforation, which, according to my opinion, is not correct. Kelly says when the perforation is small and there is little or no bleeding, employ the expectant plan. If the perforation is larger, the hemorrhage more severe, and bowel or omentum prolapsed, operate.

I think the above cited case would have done better without operation, even though there was quite a fair sized hole in the uterine wall and omentum had been prolapsed. When operating one has to decide whether to do so from above or per vagina; whether simply to suture the wound or do a hysterectomy. The mode of attack will depend on the individual operator, the one prefers the abdominal route, the other the vaginal. The abdominal method gives one a better view of the field of operation. When possible, I think, it is best to suture the uterine wound and then close the abdomen in the usual way. Clean cases require no drainage.

The indication for hysterectomy is given by the hemorrhage, the danger of infection, and the nature of the injury. The danger from

hemorrhage alone is not so very great. If the uterus is septic, or if there be uterine tumors present, hysterectomy is to be performed and, in the first instance, with drainage.

Before closing it may be of interest to mention several cases which show what fearful accidents have occurred through uterine perforation. Kelly quotes two, the first was reported by Dr. Mann of Buffalo. He found a hole in the uterus which admitted one finger and the ileum had been torn across. In the second case a young practitioner had, while operating on an incomplete abortion, perforated the uterus with a forceps, drawn down the bowel and cut off 6 feet of small intestine before he recognized what he had in hand. Dr. Rieck of Hamburg, Altona (in *Centrlb. Gyn.* this past summer), reported a pregnancy in the interstitial part of the tube; the sound passed into tube $\frac{3}{4}$ cm. then perforated, causing severe internal hemorrhage.

WILLIAM THOMPSON'S POEM ON SICKNESS.*

By JOSEPH GRINDON, Ph. B., M. D., of St. Louis.

William Thompson, the British poet, is hardly to be reckoned among the Immortals. Taine does not mention him, and the *Encyclopaedia Americana*, while listing twenty-one Thompsons, English and American, who attained distinction in one way or in another, is silent as to William, of that ilk. In his day, however, and for some time after, he was apparently thought worthy of a place among the bards of his land.

He was born about 1712, received Holy Orders in the English church, in which he became celebrated for his piety as well as for his literary attainments, and died in 1766. The poem "Sickness" was first published in 1746, London, 4to, and, says Anderson in a brief biographical notice prefixed to the poems in his collection of British poets, "was very favorably received by the polite and religious world." Thompson's poems were published by private subscription in 1757, and *Sickness* republished separately a short while before the poet's death. The poems appeared in several editions of British Poets after his death. Besides that of R. Anderson, alluded to above (Edin. 1795, vol. 13) there was a collection in forty-eight 16mo. vols. by Thomas Park (London, 1808) and another by A. Chalmers, "Works of the English Poets," published in 1810, in which Thompson's works were included; although they are not contained in Dudley's "Poems."

The least critical eye easily discerns the influence of Milton and of Spenser in our author's productions. They show however little of the genius of their prototypes, and are marred by all the faults of the period. Pietistic preachments, generally lacking the ring of sincerity, are jumbled with forced allusions to Greek mythology which only serve to air the writer's erudition in the classics, while the fulsome praises of noble patrons offend and disgust the modern reader. Nevertheless, Chalmers opines that "The poetical beauties are such as to prove that he had much of the fire and enthusiasm of true genius," while Anderson, speaking of *Sickness*, "his capital production," says, "In this work boldness of personification, energy of language, sublimity of sentiment, pathetic representation, and the most exquisite beauties of poetry, are ennobled with Christian and moral truths."

For our part we will admit that here and there are to be found a few lines of real beauty, and that the work shows much originality in its conception if not in execution. To the medical reader at least, it is not without some interest.

*Read before the St. Louis Medical History Club.

Thompson's most pretentious production, *Sickness*, in five "books," was suggested, he tells us in a note, by his recovery from the small-pox, and was at first designed as a hymn of gratitude to the Almighty. "But the subject being very extensive, and capable of admitting serious reflections on the frail state of humanity, I expatiated further upon it. It cannot be supposed that I should treat upon sickness, in a medicinal, only in a descriptive, a moral and a religious manner. * * * * I have just taken such notice of the progress of the small-pox as may give the reader some small idea of it, without offending his imagination. * * * * I do not remember to have seen any other poem on the same subject to lead me on the way, and therefore it is to be hoped the good-natured reader will the more readily excuse its blemishes."

The first book has the same title, "Sickness," as the entire poem. The introductory invocation and many of the figures later employed are manifestly inspired by the reading of "Paradise Lost." Book first begins:

"Of days with pain acquainted, and of nights
Unconscious of the healing balms of sleep,
That burn in restless agonies away;
Of sickness, and its family of woes,
The fellest enemies of life, I sing,
Horizon'd close in darkness."

After much moralizing on the vanity of earthly pomps and joys, the poet depicts himself wandering among the fields on St. Valentine's day, Ianthe by his side. We will let him continue:

"to my heart I prest
Her spotless sweetness; when (with wonder, hear!)
Though she shone smiling by, the torpid powers
Of heaviness weighed down my beamless eyes
And prest them into night. The dews of death
Hung clammy on my forehead, like the damps
Of midnight sepulchres * * * * *
* * * * * My head is torn
With pangs insufferable, pulsing starts
And pungent aches, grinding through the brain,
To madness hurrying the tormented sense,
And hate of being."

After thus graphically portraying the suddenness of onset of the prodromata, he proceeds:

"New horrors rise. For in my pricking veins
I feel the forked flame: the rapid flood
Of throbbing life, excursive from the laws
Of sober Nature, and harmonious Health
Boils in tumultuary eddies round

Its bursting channels. Parching thirst, anon
 Drinks up the vital maze. * * * * *
 * * * * * O! ye rivers, roll
 Your cooling crystal o'er my burning breast
 For Etna rages here! Ye snows descend;
 Bind me in icy chains, ye northern winds,
 And mitigate the furies of the fire!*

The remainder of the first book is devoted to meditations on the wholesomeness of affliction. The writer does not inform us, however, here or elsewhere, whether Ianthe was the worse for her close contact with the disease.

The Second Book, called "The Palace of Disease" and often recalling Pandemonium, describes how

"Deep in a desert-vale, a palace frowns
 Sublimely mournful,"

Within it, holding her court

"Malignantly delighted, dire Disease
 Surveys the glittering pest, and grimly smiles
 With hellish glee. Beneath, totters her throne
 Of jarring elements; earth, water, fire;
 Where hot and cold and moist and dry maintain
 Unnatural war. Shapeless her frightful form.
 * * * * *
 Her eyes, two comets; and her breath, a storm;
 High in her wither'd arms she wields a rod,
 With adders curl'd and dripping gore; and points
 To the dead walls, besmeared with cursed tales
 Of plagues red-spotted, of blue pestilence,
 Walking in Darkness."

Among those composing her court are

"The knotted Gout,
 The bloated Dropsy, and the racking Stone
 Rolling her eyes in anguish; Lepra foul,
 Strangling Angina, Ephialtic** starts;
 Unnerv'd Paralysis; With moist Catarrhs;
 Pleuritis bending o'er its side, in pain
 Vertigo; murderous Apoplexy * * * * *"

About the throne of Disease, occupying places of honor are

"Six favorite furies, next herself accurst,"

*Here are four lines, but they suggest that Thompson's reading was not limited to his favorites, Milton and Spenser. Shakespeare makes King John, when tortured by poison, say:

"None of you will bid the winter come,
 To thrust his icy fingers in my maw:
 Nor let my Kingdom's rivers take their course
 Through my burn'd bosom: Nor entreat the North
 To make his bleak wings kiss my parched lips
 And comfort me with cold."

**'εφιάλτης.

War, Intemperance, and Melancholy, "Britannia's bitter bane," are three of these,

"Fever the fourth: adust as Afric wilds,
Chain'd to a bed of burning brass; her eyes
Like roving meteors blaze, nor ever close
Their wakeful lids: she turns, but turns in vain
Through nights of misery. Attendant Thirst
Grasps hard an empty bowl, and shrivel'd strives
To drench her parched throat. * * * * *

* * * * *

Consumption near, a joyless, meager wight
Panting for breath, and shrinking into shade
Eludes the grasp. * * * * *

* * * * * Scarce her legs

Feebly she drags, with wheezing labor on,
And motion slow. * * * * *

The last, so turpid to the view, affrights
Her neighbor hags. Haply, herself is blind
Or madness would ensue; so bloated black
So loathsome to each sense; the sight or smell,
Such foul corruption on this side the grave;
Variola yclep'd; ragged and rough
Her couch perplex'd with thorns. * * * * *

* * * * *

The poet then gives us his ideas on the etiology of small-pox, in which may be found the theories of the iatro-mechanicians, then current. These theories he not improbably absorbed from that zealous adherent of the school, Dr. John Freind, whom he praises in a later part of the poem. The notion of atoms of definite shape and size originated with Pythagoras and was further elaborated, in its medical bearing, by the Methodists.

"Variola, what art thou? Whence proceeds
This virulence, which all but we escape?
Thou nauseous enemy to human kind:
In man, and man alone, thy mystic seeds,
Quiet, and in their secret windings hid,
Lie unprolific, till infection rouze
Her poisonous particles, of proper size,
Figure, and measure, to exert their power
Of impregnation; atoms subtle, barbed,
Infrangible, and active to destroy;
By geometric or mechanic rules
Yet undiscover'd; quick the leaven runs,
Destructive of the solids, liquids, blood
Of mortal man, and agitates the whole
In general conflagration and misrule."

Thompson then mentions a number of the noted personages of his day who had fallen victims to this disease.

The Third Book, entitled "The Progress of Disease," continues the symptomatology of Variola.

"The forehead roughens to the wondering hand,
Wide o'er the human field, the body, spreads
Contagious war, and lays its beauties waste.
* * * * *

Ah, too, the lustre of the eye is fled!
Heavy and dull, their orbs neglect to roll.
In motionless distortion, stiff and fixed;
Till by the trembling hand of watchful age
(A weeping matron, timorous to affright,
And piously fallacious in her care
Pretending light offensive, and the sun)
Clos'd."

Then follows a very good description of the subjective phenomena of delirium, too long to quote in full. I shall however cull a few passages:

"Though at their usual entrance quite shut out
External forms, forbidden, mount the winds,
Retire to chaos, or with night commix;
Yet, Fancy's mimic work, ten thousand shapes
Antic and wild, rush sweeping o'er my dreams."

Some of his visions are pleasant and peaceful

"gentle and bright
As hermits sleeping in their mossy cells,
Lull'd by the fall of water."

And again

"sudden, black,
And horrible as murderers; or hags
Their lease of years spun out, and bloody bond
Full flashing on their eyes; the gulf, beneath
Maddening with gloomy fires; and Heav'n behind
With all her golden valves for ever clos'd.
Now in Elysium lap'd and lovely scenes,
Where honeysuckle, rose and eglantine
Narcissus, jassmin, pinks, profusely wild
In every scented gale, Arabia breathe,
As blissful Eden fair * * * * *
* * * * *Momental bliss!
For sudden rap't, the midnight howl of wolves
The dragon's yell, the lion's roar, astound
The trembling ear. Ha! down a burning mount
I plunge, deep, deep: Sure Vulcan's shop is here
Hark, how the anvils thunder round the dens.
Flammivomous! What? Are these chains to bind
This Skeleton? The Cyclops must be mad:
These bolts of steel, those adamantine links

Demand Typhaeus' strength to burst; Away
 Venus and Mars—beware—In giddy whirls
 I ride the blast, and towering through the storm
 Enjoy the palace of the Moon. The Sun
 Resigns the reins of Phlegon to my hands:
 His mane waves fire: He scorches me to dust:
 Avaunt, thou fiend!—I'll hurl thee down the deep
 Of Heav'n, with bolted thunder, and enwrap't
 With forky lightnings—Now staggering I reel
 By murderers pursued: my faithless feet
 Scarce shift their pace: or down rushing amain,
 I cease to recollect my steps, and roll
 Passive on earth. * * * * *
 * * * * *
 Now starting from this wilderness of dreams
 I wake from fancied into real woe.
 Pain empties all her vials on my head,
 And steeps me o'er and o'er. Th' envenom'd shirt
 Of Hercules enwraps my burning limbs
 With dragon's blood: I rave and was like him
 Writhing in agony. Devouring fires
 Eat up the marrow frying in my bones."

After a fervent prayer for patience, which is answered by renewed hope, he acknowledges the help afforded by medical art.

"Ev'n pagan Wisdom bade her sons adore
 As one, the god of physic and the day,
 Fountain of vegetation and of life,
 Apollo, ever blooming, ever young
 And from his art immortal! Thus of yore
 The prime of human race from Heav'n deduc'd
 The bright original of Physic's pow'r:
 And not unjustly deem'd that he who sav'd
 Millions from death, himself should never die."

After dwelling on the complexity of the human body, he asks:

"What art divine shall tune
 To order and refit this shatter'd frame?
 * * * * * who but the race
 Of Paean? Who but physic's saving sons?
 A Ratcliff (1), Frewin, Metcalf, or a Frend? (2)."

(1) John Radcliffe, 1650-1714. (Park, by the way, with the carelessness of statement which characterizes his *Epitome of the History of Medicine*, places this worthy just a century from his true date.) An "eminent, witty and successful" London physician, founder of the Radcliffe Library at Oxford. It was he who said that in his early days he knew of twenty remedies for every disease, but later found twenty diseases for which he did not know one remedy.

(2) John Freind, 1675-1728, who wrote a "History of Physik from the time of Galen to the beginning of the Sixteenth Century." He was a zealous iatromechanician and a friend of Mead. He was not only distinguished as a physician, but also as a publicist. He was elected to Parliament and was cast into the Tower by Sir Robert Walpole for speaking (says Baas) against the imprisonment of a Bishop.

Book IV., The Recovery, depicts the longing of the fevered sufferer for sleep, which, according to him, he has not enjoyed for "fifteen nights." At last he sinks into unconsciousness, but upon awakening experiences the photophobia consequent upon the conjunctivitis which attends confluent small-pox.

"I thank thee, Sleep! Heav'ns! Is the day restor'd
To my desiring eyes? Their lids, unglew'd,
Admit the long-lost light, now streaming in
Painfully clear! O check the rapid gleam
With shading silk, till the weak visual orb
Stronger and stronger, dares imbibe the sun
Nor watering, twinkles at unfolded day."

In the Fifth Book, entitled "The Thanksgiving," he acknowledges the Divine mercy, and ends with a hymn of praise addressed to the Trinity.

This attack of small-pox was not the only illness endured by Thompson, for we find a "Hymn in Sickness—written in the great epidemical cold of 1732," evidently a visitation of *la grippe*, in which

"Straining coughs this mortal frame
To dissolution bring."

His leaning toward medical subjects is further shown in a brief poem "To Dr. Linden, on his Treatise on Chalybeate Waters."

It must not be supposed, however, that all of Thompson's poetry is tintured with medical allusions. Some of his shorter productions on more purely poetical subjects are not without a certain grace. You will, I hope, pardon me, if in closing I stray wide of our avowed purpose to quote two verses from a little poem on "The Happy Life" wherein the matter is reminiscent of Horace, while the manner is rather that of Kit Marlowe:

"Thrice happy they, who careless laid
Beneath a kind embow'ring shade,
With rosy wreaths their temples crown
In rosy wine their troubles drown.

* * * * *

Begone, ambition, riches, toys,
And splendid cares and guilty joys.
Give me a book, a friend, a glass
And a chaste laughter-loving lass."

MEDICAL AND SURGICAL PROGRESS.

THE ROENTGEN RAY IN PEDIATRICS.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. USE OF X RAY IN STUDY OF DISEASES IN CHILDREN.—George (*Bost. Med. & Surg. Jour.*, March 19, 1908).
2. Fruhoun-Lapeyrade, Thèse de Paris (*Arch. de Med. des Enf.*, June, 1907).
3. STUDY OF EARLY CONDITIONS OF OSTEOMYELITIS BY THE ROENTGEN RAY.—Rotch and George (*Archives of Ped.*, Vol. 24, 1907, p. 481).
4. ZUR ROENTGEN DIAGNOSE DES SÄUGLINGSSKORBUTS.—Klotz (*Monatschr. f. Kinderheilk.*, April, 1908).
5. L'ADENOPATHIE TRACHEO-BRONCHIQUE.—Leroux (*Arch. de Med. des Enf.*, February, 1908).
6. L'ADENOPATHIE TRACHEO-BRONCHIQUE DES NOURRISOUS.—Boujarel (Thèse de Paris, *Arch. de Med. des Enf.*, Dec., 1907).
7. IBID.—Variot et Rist (*Soc. de Pédiatrie*, May 21, 1907).
8. CASE OF LYMPHADENOMA TREATED BY THE X RAY.—Clarke (*British Med. J.*, October 26, 1907).
9. A CASE OF STATUS LYMPHATICUS AND ENLARGED THYMUS SUCCESSFULLY TREATED BY THE X RAY.—Friedlander (*Arch. of Ped.*, July, 1907).
10. DE LA RADIOSCOPIE DANS LA PNEUMONIE DE L'ENFANT.—Weill et Thevenot (*Arch. de Med. des Enf.*, July, 1907).
11. Guinon et Reutsaet (*Arch. de Med. des Enf.*, March, 1908).
12. DIE RADIOLOGISCHE TOPIK INTRAKRANIELLER TUMOREN IN KINDESALTER.—Klotz (*Archiv. f. Kinderheilk.*, Vol. 48, p. 19).
13. RADIOSCOPIE UND ANGEBORENE SYPHILIS.—Thomsen (*Bib. f. Laeger*, 1907, p. 69).

While speaking of the value of the x ray in connection with the exact diagnosis of osseous anomalies, fractures in the neighborhood of joints, and early pulmonary tuberculosis in children, George insists especially upon its importance in connection with tuberculous and non-tuberculous infections of the bones. A certain number of cases of so-called "hip-disease," are shown by the x ray to be acute, subacute, or chronic osteomyelitis. The location of the disease in these cases is inside the joint capsule, yet the symptoms, clinically, are those of hip disease. In these cases the x ray is our most valuable method of diagnosis. It locates the focus of the disease and enables us to decide more easily, whether or not these cases are operable. Fruhoun-Lapeyrade calls at-

tention to the value of the x ray, not only in the diagnosis of coxalgia, but as a means of illustrating, as it were, the progress of the disease, and the result of treatment. The precise therapeutic indications thus offered mean much for the patient. The possibility of very early diagnosis allows the adoption of rational therapy at a time when it is most calculated to have good results. The Roentgen ray has shown the existence of both diffuse and circumscribed forms of the disease.

Rotch and George have made a careful study of a series of cases of osteomyelitis in childhood by means of the x ray. In the early stages of the disease, when the diagnosis is often extremely difficult, the x ray oftentimes affords valuable information. The early bone changes, as seen by radioscopy, consist of thickening and bulging of the periosteum. If, however, the infection is in the marrow, it shows in the radiograph as a clear, definite shadow. At the June, 1908, meeting of the American Medical Association, Rotch read a paper (before the Section on Diseases of Children) on anatomic vs. chronologic age, in which he called attention to the x ray as a factor in determining the chronologic, *i. e.*, developmental, age of children, as opposed to the anatomic, *i. e.*, numerical, age. Recently there has been much discussion relative to chronologic age. In its determination, the x ray is the most important single diagnostic factor.

Klotz, speaking of the Roentgen ray in the diagnosis of infantile scurvy, quotes Fränkel's demand, that a radiograph be taken in every case where there is a suspicion of scurvy. This diagnostic method is of special value in the cases without marked symptoms, where the diagnosis is difficult. The picture in these cases shows a narrowing of the cortical bone area (of the long bones) and a blurring of the finer markings of the spongiosa. In some cases there may be shown a lifting of the periosteum from the bone, as a result of subperiosteal hemorrhages.

As is well known, the French pediatricists have paid special attention to the diagnosis of enlarged bronchial glands. Boujarel, who has studied the condition in the nursling, finds that radioscopy gives valuable diagnostic aid. The shadow of the enlarged glands shows clear at the hilus of the lungs, around the bifurcation of the bronchi. The shadow shows rounded contours. In order that these methods may yield positive results, this author holds that the glands must have attained considerable size. Confirmatory testimony as to the value of radioscopy in the diagnosis of enlarged bronchial glands, is offered by Vanot and Rist, and Leroux. The latter author, while insisting that the x ray should not be used to the exclusion of other diagnostic methods in cases of suspected enlarged bronchial glands, asserts categorically that the x ray will show enlargements of the tracheo-bronchial glands that escape other methods of examination. In a case recently under the observation of the author of this review, the radiogram of the chest showed the distinct shadow while the bronchial glands were enlarged. When the clinical symptoms had disappeared, the lymphocytosis had gone and the child was, to all intents, well, the chest radiogram became absolutely negative. In this case the enlarged bronchial glands were not tubercular, the enlargement being due, as is so often the case, to pertussis. Clarke reports a case of generalized lymphadenoma treated by the x ray. There was marked improvement of the adenitis after a thorough course of treatment. After an interval the glands again enlarged. After x ray treatment there was again a marked reduction in the size of the glands. This cycle was repeated three different times. Death occurred, two years after the last course of treatment, from intercurrent pneumonia. The

autopsy showed an hyperlasia (generalized) of the lymph glands with a chronic fibroid lymphadenoma with nodules in liver and spleen.

Friedlander has reported a typical case of status lymphaticus with enormous enlargement of the thymus. The bronchial glands were very decidedly enlarged. In this case treatment with the x ray brought about a very rapid and very decided reduction in the size of thymus, with correlate disappearance of all the symptoms of thymic asthma, which had threatened the life of the child. The subsequent development of the child (it is now over four years old) has been normal in every respect. In hitherto unpublished communications to the author, Drs. Forchheimer, of Cincinnati, and Myers, of Milwaukee, have reported similar good results in cases of status lymphaticus with enlarged thymus, as a result of treatment with the x ray.

The value of the Roentgen ray in the early diagnosis of pulmonary tuberculosis in childhood has already been alluded to. Various authors have added confirmatory testimony in this regard. Weill and Thevenot call attention to the value of radioscopy in the diagnosis of obscure pneumonia in children. They find that true pneumonia with exudate gives a definite shadow. The parallelism between the radiogram and physical signs is distinct. Certain cases of bronchiopneumonia, clinically not distinct, do not give a clear radiographic shadow. In the cases of so-called central pneumonia (certainly rare according to the authors), the x ray often affords valuable diagnostic aid. Guinon and Rentsaet report an interesting case of Hirschsprung's disease (congenital dilatation of the colon), where the tentative diagnosis was confirmed by passing into the child's rectum a large catheter filled with a bismuth emulsion, and then taking a radiogram of the abdomen. It may be noted, in passing, that abdominal radioscopy in childhood is just becoming recognized as a valuable diagnostic aid.

Discussing the diagnostic value of the x ray with reference to brain tumors in childhood, Klotz concludes that the ray may be of distinct diagnostic value in that it may help to localize the position of the tumor, and so help to determine the decision as to the possibility of successful surgical interference. Again as a method of confirmation and control of the diagnosis itself, the ray may prove of value and may prove an aid to the operation itself in some cases. It is, however, to be remembered, that just during the period of childhood the interpretation of the cranial radiogram may be especially difficult. Thomsen has reported cases showing that the x ray may be of aid in the diagnosis of hereditary syphilis. Very often a syphilitic osteochondritis was discovered, by the x ray, in children who showed no other signs or symptoms of congenital syphilis, and in whom the diagnosis would thus have been almost, if not quite, impossible without the use of the x ray.

NON OPERATIVE (MEDICAL) TREATMENT OF CATARACT.

A REVIEW OF RECENT LITERATURE.

By JOHN GREEN, JR., M. D.

1. MEDICAL TREATMENT OF SENILE CATARACTS.—Verderau (*Archivos de Oftalmologia Hispano-Americanos*, July, 1906).
2. THE TREATMENT OF INCIPIENT SENILE CATARACT BY SUBCONJUNCTIVAL INJECTIONS OF POTASSIUM IODIDE.—Pflugk (*Wien. Med. Presse*, March 17, 1907).
3. SUBCONJUNCTIVAL INJECTIONS OF POTASSIUM IODIDE IN THE TREATMENT OF CATARACT.—Menacho (*Archivos de Oftalmologia*, June, 1906).
4. CONTRIBUTION TO THE TREATMENT OF CATARACT BY SUBCONJUNCTIVAL INJECTION OF POTASSIUM IODIDE.—Pons y Marques (*Archivos de Oftalmologia Hispano-Americanos*, December, 1906).
5. NON-SURGICAL TREATMENT OF LAMELLAR AND NUCLEAR CATARACT.—E. J. Bernstein (*Ophthalmology*, July, 1907).
6. DOES THE OPACITY OF INCIPIENT CATARACT EVER REGAIN TRANSPARENCY?—Connor (*Jour. A. M. A.*, July 6th, 1907).

Five years ago, were one to venture the assertion that any benefit whatsoever could accrue from the medical treatment of the cataractous lens he would very promptly have been convicted of ophthalmologic heresy and relegated to the ranks of charlatans. To-day those who believe in the invariable inefficacy of non-surgical methods in cataract are probably not aware of the suggestive and occasional surprisingly favorable results obtained by several observers who have devoted especial attention to this hitherto neglected field. While it is undeniable that the disappointments following present medical methods may be many, the possibility of success, even in a small minority of cases, should induce the unbiassed observer to maintain an openness of mind with respect to this highly important question.

In 1902, before the French Ophthalmological Society, Badal recommended the local application of potassium iodide in aqueous solution in the treatment of cataract. Two years later, Verderau reported encouraging results following the subconjunctival injection of a solution of potassium iodide. He injected subconjunctivally, at irregular intervals, a solution containing 2½% of potassium iodide, to which 1% acoin and 2% cocaine hydrochlorate had been added. In 21 cases so treated vision was improved in all, rising in some cases from 1-10 to 2-3. The number of injections varied from five to fourteen.

Equally encouraging results have been obtained by v. Pflugk who declares that this method of treatment improves vision and renders the striae less opaque. He uses a solution of potassium iodide of the following formula: KI 0.2; sodium chloride 0.2; aq. dest. 10.0; to this is added one drop of a one per cent. cocain solution for 1 gm. of potassium iodide solution, and of this mixture one-half to one syringeful is injected at each sitting. In the intervals between the injections dionin powder is insufflated into the conjunctival sack. After employing this treatment two weeks, a rest of two weeks is taken, during which time only a solution of dionin is instilled into the conjunctival sack. It should

be remarked that the conjunction of the two methods—instillation of dionin with the subconjunctival use of potassium iodide—vitiates any positive conclusion which might be drawn from the use of either alone.

On the other side of the ledger should be recorded the views of Menacho and Pons Y. Marques. The former summarizes his results in three cases as follows: Case I. R. eye cortical cataract with one large and several small equatorial striæ. L. eye, beginning cortical cataract. R. eye only injected. Eighteen months later it appeared that the larger stria was somewhat narrower, but new striæ had begun in the equatorial region. The right cataract had advanced at the same rate as the left. Case II showed an increase in the cataractous process indicated by the increase in myopia and opacification, and decrease in visual acuity. Case III. Cataract due to chorio-retinitis. No improvement following injections. Case IV. Incipient posterior lenticular cataract. Slow advancement noted after 35 injections.

Pons y Marques presents three observations. Case I. Diffuse and incomplete opacity of both lenses. After 12 injections the treatment was abandoned as vision had diminished. Case II. R. eye, lenticular cataract, posterior iritic synechia. L. eye, phthisis bulbi. Noticeable improvement in the vision of the R. eye after seven injections. Case III. Lenticular cataract, both. Slight improvement in vision of R. eye after the fifth injection.

Both Menacho and Marques dwell upon the extreme painfulness of the procedure. Menacho also notes inflammatory adhesions of the conjunctiva following these injections.

E. J. Bernstein has experimented with dionin injected subconjunctivally in one case of lamellar and two cases of nuclear cataract. His first case, a boy of 6, with lamellar cataract, R. eye 20-200 L. eye 10-200. Ophthalmoscopically, the right disk could be faintly discerned, while on the left side no fundus details were visible. Once a week, two drops of a one-half per cent. solution of dionin was injected deeply under Tenon's capsule. He was given also a solution containing 1 per cent. atropin sulphate and 5 per cent. dionin to be dropped into the eye once daily. Under this treatment vision improved in the right eye to 20-50, with — 1.5 and in the L. eye to 20-100 with — 2. Ophthalmoscopically the central portion of each lens had cleared up remarkably so that the fundus was visible in both eyes.

Case II. Incipient nuclear cataract, in a woman of 72. R. eye V 20-60, L. eye counts fingers at 2 m. Subconjunctival injections of 2 per cent. dionin in 2 per cent. glycerin solution were instituted each week. Eight months later R. eye with — 2.5 sph. 15-30. L. eye with — 2.5 V 15-50. With — 1.5 reads Sn. 0.5 "with as great ease as ever in her life." Case III. Female, age 70, with nuclear cataract in each eye. R. with — 3. V 15-40 L. eye with — 3. 15-50. Fundus normal. Weekly subconjunctival injections of two per cent. dionin in glycerin and water improved vision in the R. eye to 15-30 and L. eye to 15-40.

Despite the improvement in vision in these two cases the ophthalmoscope showed little or no change in the appearance of the lenses.

In this connection the possibility of the spontaneous disappearance of the striæ of incipient cataract must not be forgotten. This question has recently been dealt with by Connor who reports 147 cases of partial or complete spontaneous clearing, in the practice of 51 observers.

It would appear that the results so far obtained in the non-surgical management of cataract are suggestive rather than conclusive. They are sufficiently encouraging to warrant further experimentation along these and similar lines.

CONGENITAL DISLOCATION OF THE HIP.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. THE VARIETIES OF CONGENITAL HIP DISLOCATION.—Froelich (Nancy), French Surg. Cong. Trans. Rev. d'Ortho., March, 1908.
2. NON-OPERATIVE TREATMENT OF CONGENITAL HIP DISLOCATIONS IN ADULT SUBJECTS.—P. Redard, (Paris), French Surg. Cong. Trans. Rev. d'Ortho., March, 1908.
3. THE RATIONAL TREATMENT OF CONGENITAL HIP DISLOCATION.—P. Le Damany, (Rennes), French Surg. Cong. Trans., Rev. d'Ortho., March, 1908.
4. THE RESULTS OF 50 OPERATIONS FOR CONGENITAL DISLOCATION OF THE HIP.—Judet, (Paris), French Surg. Trans., Rev. d'Ortho., March, 1908.
5. THE TREATMENT OF CONGENITAL DISLOCATION OF THE HIP BY MANUAL REDUCTION.—Derscheid-Delcourt, La Pathologie Infantile, 1908, 1, p. 1.
6. OBSERVATIONS AND PERSONAL STATISTICS ON THE MANUAL REDUCTION OF CONGENITAL DISLOCATION OF THE HIP.—Secchi, (Milan), Trans. 4th Cong. Italian Ortho. Surg., Rev. d'Ortho., May, 1908.
7. CONGENITAL DISLOCATION OF THE HIP IN A MAN OF 54 YEARS. NO TREATMENT. A GOOD NEW JOINT FORMED.—Chaput, Rev. d'Ortho., March, 1908.
8. CONGENITAL DISLOCATION OF THE HIP. ITS CAUSES, MECHANISM AND ANTHROPOLOGICAL SIGNIFICANCE.—Le Damany, Zeit. für Orthop. Chir., xxi B. 1-3 H.

Froelich divides the cases of Congenital Dislocation of the hip into three groups: (1) Traumatic luxations with normal joint cavities; (2) luxations due to early malformation of the joints; (3) luxations, pathological and acquired. In the first group we find the cases that are produced during intra-uterine life by pressure of the uterus, coupled with scant amniotic fluid, or by an extreme adduction of the limbs joined with the muscular action of the pelvi-crurale muscles. A sharp traumatism from without may be transmitted through the uterus and cause a luxation of the femur. Finally the dislocation may be produced at the time of labor. The great majority of the cases are in the second group, and here there is some vice in the embryo that causes a lack of development at the acetabulum, making it impossible or extremely difficult to replace and retain the femoral head. In the last group of cases, we find those that develop in the first month of life, following an arthritis of the hip joint, such as osteomyelitis. For the first group of cases, a complete cure is the rule. In the other two groups, cure is less frequent, improvements are quite numerous, but they have those that are unavoidable failures. These observations are based on 74 cases; 23 in the first group; 51 in the second; 12 in the third. Anatomic, radiographic and clinical study incline the author to these views. Redard is possessed of the following

views in the treatment of cases that have passed their 12th year. He does not advise reduction on account of the great difficulty attending and following the operation, but prefers to establish a pseudo-reduction, by placing the head of the femur behind, or better, in front and below the anterior iliac spine; this is called by Lorenz "a transposition." It is here held in plaster for 3 months. The results thus obtained are diminution of pain and improvement of gait. He prefers this to open operation. Le Damany recommends an apparatus that gives much better results in his opinion than the long confinement in plaster recommended by Lorenz. This consists of a brace specially made that will prevent relaxation, by supplying immobilization, but which can be removed and thus allow manipulation to overcome the defective cotyloid cavity and the torsion of the femur. Judet reports the following results obtained in 50 cases since 1902. In the beginning, he used the three stage method described by Brun and obtained in 19 cases, 11 anterior transpositions, 7 anatomic reductions and one failure. By his own method in a series of 18 cases, he obtained 17 reductions and one transposition. These cases, however, were between the ages of 3 and 6 years, and presented shortening of limb from 3 to 4 cm.—very favorable cases. They were completely cured by reduction and confinement in plaster for 5 months, 90 degrees flexion and abduction, 60 degrees. After the removal of the spica, he allowed the limb to return, little by little, to the normal position, by the action of the hip muscles, using massage and gentle manipulation. After 1 to 2 months in bed, the children began to walk. This is the best method for ordinary single or double dislocations. In children, six, ten or twelve years of age, it is necessary to apply two plasters; the first holds the limb in 90 degrees abduction and flexion and outward rotation; the second, in 45 degrees abduction and internal rotation. Where children under 3 years are treated, it is often necessary to change the plaster in order to maintain reduction. Derscheid and Delcourt have got together a summary of the knowledge of bloodless reduction of this deformity, and report six cases which show its complete success as a surgical method.

Chaput reports a case of single dislocation in a man of 54 years who came under his observation for trouble with his shoulder joint. He had limped since childhood and had pain due to the marked shortening of the right lower extremity. The trochanter was high above Nelaton's line but did not make any excursion, difficulty was entirely due to shortening and was easily corrected with a heightened shoe. A radiogram showed the normal acetabulum very much undeveloped. Above this a new joint cavity, deep and sufficient to retain the femoral head, had formed. No treatment had ever been instituted.

Secchi, after bringing up the old question of Italian priority for the bloodless method of reduction, shows what he considers to be the physiological reasons for the replacement being permanent after the bloodless reduction. He disagrees with Lorenz on the question of the head of the femur digging out the acetabulum, and consequently believes that allowing the patient to walk may be harmful; certainly could do no good. He adds to the treatment a stage called "functional mobilization" which consists of active movements, electricity and massage. He reports 163 cases; 75 single; 44 bilateral or 119 patients, ranging from 17 months to 14 years of age; 80 replacements; 32 transpositions; 5 luxations; 11 failures to reduce; 1 fracture of femur; 5 unknown results. Complete treatment, 7 to 9 months. Radiographs should be taken from time to time during the treatment.

Le Damany has written a most interesting article on the mechanism of congenital dislocation of the hip. He has considered the causes from the standpoint of embryology and anthropology, concluding that the assumption by man of the erect position is only possible by paying a certain price in skeletal deformities. These deformities, he clearly shows to be a distortion of the femur and a distortion of the lower spine, the latter making the sacro-pelvic angle greater. These deformities being habitual to man, play about the hip joint as a centre which is a joint in man that has certain faults in all normal new-born individuals. These faults, he shows conclusively, to be more evident in the higher races than in the lower, a fact which corresponds to the greater frequency of congenital hip dislocation in the white race. His article takes up most carefully the physiology and anatomy of the hip, and shows conclusively that the etiology of the congenital hip dislocation is closely associated with the assumption of the upright position. He makes a therapeutic application of this knowledge, suggesting that the treatment should undertake a correction of distortions which have become normal to the human skeleton.

THE SERUM DIAGNOSIS OF SYPHILIS IN CASES OF TABES AND DEMENTIA PARALYTICA.

By SIDNEY I. SCHWAB, M. D.

1. EINE SERODIAGNOSTISCHE REACTION BEI SYPHILIS.—(*Deut. Med. Woch.*, 1906, No. 19).
2. UEBER DAS VORHANDENSEIN SYPHILITISCHER ANTISTOFFE IN DER CEREBRO-SPINALFLUESSIGKEIT VON PARALYTIKERN.—(*Deut. Med. Woch.*, 1906, No. 44).
3. LES ANTICORPS SYPHILITIQUES DANS LE LIQUID CEPHALO-RACHIDIEN DES PARALYTIQUES GENERAUX.—(*Annal. de l'Inst. Pasteur*, 1907, Vol. XXI).
4. EXPERIMENTELLER BEITRAG ZUR WASSERMANNSCHEM SERUM-DIAGNOSTIK BEI LUES.—(*Berl. Klin. Woch.*, 1907, No. 5).
5. UEBER DEN NACHWEIS SYPHILITISCHER ANTIKÖRPER IM LIQUOR CEREBRO-SPINALIS VON PARALYTIKERN NACH DEM WASSERMANN-PLAUTSCHEM VERFAHREN DER KOMPLIMENTABLENKUNG.—(*Virchow's Arch.*, 1907, p. 166-177).
6. UEBER KOMPLIMENTBINDUNGSVERSUCH BEI INFECTIÖSEN UND POST-INFECTIÖSEN (Tabes Dorsalis) ERKRANKUNGEN.—(*Duet. Med. Woch.*, 1907, No. 30).
7. LA SERO-REACTION DE LA SYPHILIS ET DE LA PARALYSIS GENERALE.—(*Compt. rend. d. l'Societ. de Biologie de Paris*, 1908, No. 8).
8. ZUR THEORIE UND PRAXIS DER SERUMDIAGNOSE DER SYPHILIS.—(*Berl. Klin. Woch.*, 1908, No. 10).
9. RIV. SPER. DI FREN., 1908, Vol. 34 i-ii.
10. ERFAHRUNGEN MIT DER SERODIGNOSTIK DER SYPHILIS.—(*Berl. Klin. Woch.*, 1908, No. 6).

One of the most interesting questions in the development of the knowledge concerning tabes and paresis, has been the role of syphilis in the causation of the two diseases. The method used in the attempt to solve this question was, for a long time, largely centered in the analysis of statistics which had to do with the history of past infection and the evidence of the existence of syphilis coincident with the symptoms of the disease. Though, in a measure, the use of the statistical method had pretty generally solved the question relative to the importance of syphilis as the chief etiological factor; yet the question would always be a matter of discussion until a more perfect method of proof was devised. This proof must be free from the defects which pertain to all statistical methods, the basis of which is not capable of actual demonstration. The histories of past infections are naturally not susceptible of any exact proof. With the elaboration of a serum reaction specific to syphilis and nothing else, and the use of this in the examination of the spinal fluid of syphilitics, the way was naturally opened for a more exact approach to the other question, that of the syphilitic origin of the two diseases. With the publication by Wassermann, Neisser and Bruck, in 1906, of a new method and of its utilization in the examination of the cerebrospinal fluid of dementia paralytics in the

same year, the whole question enters upon a new phase. An analysis of the considerable literature which has arisen since then might prove of interest both in regard to the facts at issue and in regard to the method and the development of scientific thought when applied to so old a problem as this.

For the diagnosis of syphilis the method of complement fixation was utilized (Wassermann, Neisser, Bruck). The basis of this method may be stated briefly as follows: The blood serum of monkeys previously treated with the syphilitic material of man or monkeys, is mixed with the extract from the organs of hereditarily affected feti or of that of the syphilitically infected organs. Haemolysis does not take place. This phenomenon seemed to prove that in the monkey's immune serum there were antibodies against the specific syphilitic substance, and that in the extract itself was contained the antigens. Antigens are all substances, which when injected into animals, are capable of producing antibodies. The specificity of this reaction followed from the fact that, first, immune serum reacted only with extracts of syphilitic organs, and not with that of normal organs; two, normal monkey serum does not effect syphilitic organ extracts; three, serum of monkeys which has been treated not with syphilitic but with normal human material react neither with syphilitic or normal extract. As a result of this investigation and the conclusion arrived at, these authors believed that it was possible in the living to determine whether there was in the fluid of the body, such as the spinal fluid, specific antibodies active against the luetic organism; and further, whether in a certain organ there was contained syphilitic substances. The first practical application of this theory was made by these same authors. (2.) The spinal fluid of forty-one cases of dementia paralytica was treated in this way. It was found that thirty-two showed a definite inhibition of haemolysis. This result was controlled by the examination of nineteen spinal fluids of patients who did not have the disease. There was no inhibition of haemolysis observed in this series. The authors conclude from this that in the majority of cases of dementia paralytica the spinal fluid contains antibodies, and that such patients either have had syphilis, or at present have it. An interesting feature of these early statistics is that they correspond somewhat roughly, perhaps, with the results of the statistical studies which were formerly made to settle the same point. In spite of this apparent proof of the connection in an etiological way, between syphilis and dementia paralytica, the authors did not draw any final conclusions. Their studies now were concerned with the investigation of the reaction in the blood serum of syphilitics and the study of the syphilitic content of the fluids of the body. The first corroborative work in this connection was an investigation by Marie and Levaditi. (3.) They studied the spinal fluids of thirty-nine paralytics, and found in seventy-three per cent. of them positive reactions. They divided their material into three sections, the first included uncertain cases, so-called pseudoparalysis, in which there was only ten per cent. positive results. In the second class were beginning cases, seventy-seven per cent. was positive; in the third division were advanced cases; in twenty cases there was ninety-five per cent. positive results. From this the authors conclude that there is a relation between the severity of the case and the antibody content.

They express themselves somewhat skeptically about the practical value of the method, because in very early cases the results are not constant. Of course, their objection as a means of diagnosis may be sustained, but the real value of this reaction is not, and never can be,

its diagnostic utility but in its proof of the syphilitic origin of tabes and dementia paralytica.

Schutze (4) examined the spinal fluid of twelve cases of tabes. In four cases in which the history gave no evidence of syphilis, the reaction was negative. In seven in which there was a history of syphilis, the reaction was positive. Morgenroth and Stertz (5) found in eight cases of dementia paralytica a positive reaction. In eight cases of other diseases, in which there was no connection with syphilis, the reaction was negative. Citron (6) examined eighty patients with a somewhat variable result, and draws the interesting conclusion that the more extensively the patient is treated with mercury, the less the antibody content in the serum is. The spinal fluid of paralytics is richer in antibody content, and this fact is, in a sense, pathognomic of the disease. A number of investigators reported varying results. It would be tedious to collect them in a statistical report. The general conclusion seems to have been that in a great majority of spinal fluids examined in cases of tabes and dementia paralytica, the reaction was positive. Lavaditi and Yamanouchi (7), among others, began a series of observations which seemed to tend to the conclusion that the reaction was in no sense a specific one, but that it could be produced by various chemical substances. Fleischman (8), for instance, found that alcoholic extract from a normal liver could be used in place of the leucic extracts. Pighini (9) found that the neutralizing substances in all cases is cholesterin, which occurs free in the central nervous system.

Whatever the explanation of the reaction may be found to be, the fact remains that in its constant objectivity, will be its most valuable quality. In some of the investigations, notably that of Michaelis and Lesser (10), it was found that the spinal fluid of patients with hereditary lues, gave a more constant and a stronger reaction than in other cases. The importance of this finding, if it will be substantiated, is easily appreciated, especially in these doubtful cases of early developing dementia paralytica in children.

If the work on this subject be followed, it will be found that the clinical side of the reaction has well nigh been lost sight of. It has now become a matter of chemical investigation. We are in a position, perhaps, at the present time, to come to some general conclusions of the value of this procedure in a practical clinical sense. It interests the clinician less to know the exact mechanism of the reaction than whether it is constant and whether its procedure is so complex that its use is possible only in highly developed laboratories or in the hands of those with especial skill.

The constancy of the reaction has been now established by so large a number of cases that there is no longer any doubt of its value in this sense. That we have in the Wasserman reaction a means of diagnosing the existence of syphilis or its past infection, is assured. That it is found positive in about eighty to ninety per cent. of all dementia paralytics, and in almost as large a percentage of tabetics, shows conclusively that these two diseases have a very close, if not direct, connection with syphilis. The reaction can not be said to prove any more than this, at the present time. How close this connection is, and whether the relationship is a causal one or not, remains to be proven. That some eighty per cent. of all individuals who have these diseases give a positive reaction, and only a small percentage of individuals with diseases that have no presumable relation with syphilis, give a positive reaction, are two sets of facts that are presumptive of the etiological relationship of

syphilis and tabes and dementia paralytica. As a diagnostic aid, however, the reaction can not be said to have so far any great value. The means of making a positive clinical diagnosis in the two diseases are now so well developed that there is no need to make use of so complicated a procedure. The early cases, where there is often a question of diagnosis, are just the ones in which the Wasserman reaction is most uncertain. Outside of the question of its scientific value, with which the present conclusions have nothing to do, it can be said that by means of this reaction there seems to be a prospect of settling once for all the question of the relation between syphilis and dementia paralytica and tabes. If this follows there will be opened, no doubt, a wide field for further investigation in regard to the general questions of the etiology in some of the other organic nervous diseases. What is needed now more than anything else is a further simplification of this reaction, so that it can be used in so large a material and in the hands of so many different men that no doubt could be attached to its reliability.

This short resume of the literature on the subject makes no pretense to completeness; the best referat on the subject is that by Kurt Meyer, published in the *Folia Neuro-Biologica*, No. 5. In this referat there are quoted some sixty papers. The indebtedness to this paper is here acknowledged.

NEW DRUGS FOR THE TREATMENT OF PNEUMONIA.

REVIEW OF THE RECENT LITERATURE.

By WILLIAM ENGELBACH, M. D.

1. Forgennin—(*Merck's Annual Reports*, 1906, p. 8).
2. Dunger—(*Münch. med. Woch.*, 1907, No. 36, p. 1709).
3. Chantemesse—(*Klinisch-therapeutische Woch.*, 1907, No. 25, p. 663).
4. Runck—(*Münch. med. Woch.*, 1907, No. 15).
5. Netter—(*Klinisch-therapeutische Woch.*, 1907, p. 428).
(*Münch. med. Woch.*, 1907, p. 1108).
(*Journal des praticiens*, 1907, No. 20).
(*Revue internat. de medecine et de chir.*, 1907, No. 11).
6. Stark—(*Lancet*, 1907, No. 4373, p. 1710).
7. Brunton—(*Brit. Med. Jour.*, 1907, No. 2411, p. 616).
8. Scales—(*New Orleans Med. and Surg. Jour.*, 1907, Sept.).
(*Revue de therap.*, 1907, No. 20, p. 717).
9. Weissman—(*Therapeutische Monatshefte*, 1907, No. 5, p. 235).
10. Etienne—(*Revue medicale de l'est*, 1907, 1. September).
11. Cortezo, Espina, und Sanudo—(*Revista de medicina y cirugia*, 1907, May and June).
12. Deutschmann—(*Münch. med. Woch.*, 1907, No. 9, p. 921).
(*Deutsche med. Woch.*, 1908, No. 4, p. 172).
13. Deneke—(*Deutsche med. Woch.*, 1908, No. 4, p. 172).
14. Blanck—(*Berliner tierärztliche Wochenschrift*, 1907, No. 45, p. 800).
15. Wolff—(*Tierärztliche Rundschau*, 1907, No. 48).
16. Knauth—(*Merck's Annual Reports*, 1905, p. 195).
17. Passler—(*ibidem*, 1904, p. 179).
18. Tauber—(*ibidem*, 1906, p. 253).
19. Schaffer—(*Der praktische Arzt*, 1907, No. 1 and 2).

So far Forgennin (1) (tetramethyl-ammonium formate) has played a subordinate in therapeutics. Piccinini's communications on this subject show that in animals it first excites and then paralyses the cardiovascular system. The lethal dose is 0.01 grm. (gr. 1-6) per kilo for rabbits, 0.01—0.02 grm. (gr. 1-6—1-3) for dogs, injected subcutaneously. Torchio, Deroto and Ascoli found that in man forgennin showed in immediate effect in infective diseases, such as pneumonia, in collapse. The action is said to resemble that of digitalis, but this must not be taken to mean that the preparation can replace digitalis. It is perhaps especially indicated in cases of general infection, and in nervous heart troubles. The authors state that it is a useful remedy for the reason that it raises the arterial tension without increasing the frequency of the pulse. A single dose, subcutaneously, amounts to 0.01—0.02 grm. (gr. 1-6—1-3) the daily dose to 0.03—0.04 grm. (gr. $\frac{1}{2}$ —2-3). Special interest attaches to the results of Dunger (2) in his investigation into the behavior of leucocytes after intravenous injections of collargol, for they are not without some clinical significance. As the earliest phenomenon

to follow a silver injection, the author found the leucocytes to be immediately reduced by some 50 per cent. and this was followed, after 1-2 hours, by a varying degree of leucocytosis. This rose by 130—150 per cent., occasionally even to 260 per cent. of its original value, to which it reverted after 20-24 hours. The decrease of leucocytes after the injection is explained by a disturbance of part of the neutrophils, the increase which follows by over-compensation for this defect by the bone marrow, in accordance with Weigert's law. As regards the clinical significance of these phenomena, Dunger ascribes to the collargol leucocytosis the same benefits as are derived from artificial leucocytosis brought about by other drugs, such as nuclein, antipyrine, etc.; thus micro-organisms are destroyed by phagocytosis, and inorganic constituents, such as grains of silver, are expelled from the blood stream. But of greater importance is the increased stimulus to the formation of immune bodies due to the stimulation of the bone marrow. For the solution and absorption of inflammatory exudations, however, we are concerned with the liberation of the ferments contained in the leucocytes. For, as Dunger states, in the rapid process of disintegration which takes place among the leucocytes, not only fibrin ferment, but also proteolytic ferments appear. In favor of this view are the good results of collargol treatment in pneumonia, results which have been amplified by the communications of Capitan. In cases of pneumonia in which this author was unable to give intravenous injections, he had good results with intramuscular ones. Every day he gave several 2 c.c. injections of the 2 per cent. solution, viz., 6 on the first day, 4 on the second, 3 on the third, and 2 on the fourth. This method is said to be simple and efficacious. From a most interesting work by Chantemesse (3) it appears that sodium nucleinate has the power of producing hyperleucocytosis to a higher degree than collargol; it acts more powerfully than the latter. This property makes nucleinic acid a remedy of value in the treatment of erysipelas, pneumonia, and typhoid peritonitis. Its power of increasing the resistance of the organism has been convincingly demonstrated by Chantemesse in a series of cases.

The blandness and harmlessness of bromural is well shown, in contrast with sleeping remedies with definite narcotic action, by the experiments instituted by Runck (4) on children and infants suffering from restlessness or insomnia due to pneumonia. Doses of $\frac{1}{4}$ or 1-3 of a 0.3 gm. (gr. 5) tablet could be given 2 or 3 times a day without producing any disturbance of the stomach, or of the organs of excretion. In many cases the preparation was used with good results in children suffering from restlessness or cramps, after other remedies had failed, and when there was good reason for refraining from giving a narcotic.

Calcium chloride, as well as other salts of calcium, such as calcium lactophosphate, has been shown by Netter, (5) J. Stark (6) and L. Brunton (7) to be a valuable cardiac tonic in pneumonia. The dose is 0.3—0.6 gm. (gr. 5—10) every $\frac{1}{4}$ of an hour. It is given in aqueous solution, with the addition of a little saccharine if necessary to cover the unpleasant taste. The action of the calcium salt upon the heart is less striking than that of strychnine; the effect appears far more slowly. Brunton found it of great use also in heart disease with threatened weakness of the left ventricle. As regards the endermatic use of guaiacol in pneumonia and similar diseases, J. Scales (8) obtained very satisfactory results, even in children. He considers the preparation not only safe but efficacious, for in a number of cases of pneumonia and bronchitis he found it of excellent service—even in apparently hopeless cases of bronchopneumonia. He recommends it, particularly because

of its power of reducing the temperature, in oily solution which is rubbed upon the chest in quantities of 10—30 drops of guaiacol according to the child's age. In pneumonia, Weissman (9) also observed that treatment by guaiacol inunction had the effect of making the disease take a very mild course, and disappear in 4 days. Etienne (10) used colloidal silver, platinum and palladium in isotonic solution in pneumonia and bronchopneumonia. He always observed a reduction of temperature, but the metal quickly lost its action, as it is probably altered in the organism, combining with other substances; hence the injections require to be repeated at suitable intervals. In any case the results are said to be far better than those obtained with argenterum colloids. Even large doses are well tolerated without unpleasant secondary actions or local reaction. In agreement with these results are the experiences of Cortezo (11), Espina and Sanudo in this treatment of pneumonia. When failure occurs it is attributed by Triboulet to the fact of the metallic brines being given too early or too late. In his opinion it is not permissible to attempt to suppress the fever of pneumonia, and still less of typhoid or scarlet fever, but the metal should rather be given during the crisis when it is able to manifest its action completely, and complications are prevented. The only correct method of giving it is stated by the author to be the intravenous application. Five c.c. may be regarded as the initial dose; this may be injected every day or every second day. Children are given half or less. The metallic brines are not suited for internal use; they are of little use as lotions though more efficacious by inunction. Vivien in his dissertation, described a large number of cases in which he has tried it. A new universal serum, that has still to earn recognition, for it has not sufficient scientific basis, is prepared by Deutschmann (12) by a special method. For this purpose increasing doses of yeast are introduced by mouth into an animal's body, and these are thought by the author to lead to the accumulation in the animal's blood of protective or defensive substances. The serum obtained from such blood gives the human organism increased power of resistance in the battle against pneumococci, staphylococci, streptococci, etc., or their toxins. Injected intramuscularly, it is said to improve the general condition of the patients, to reduce the febrile temperature, while it is reported to be perfectly harmless. For adult doses of 3-4 c.c. are used, for children 0.75—1 c.c.; these may be given subcutaneously or intramuscularly. Deutschmann considers the serum to be indicated in pneumonia, septic and pyemic infection, erysipelas, influenza, acute tonsillitis, severely infected wounds of the eye, hypopyon keratitis, relapsing iritis, irido-cyclitis, sympathetic inflammation and in tuberculosis. Deneke (13) tested the serum in 32 cases of croupous pneumonia, and came to the conclusion that its curative action was not proved. Blanck (14) and Wolff (15), however, obtained satisfactory results with the serum in distemper in dogs. The successful results of Knauth (16), Passler (17) and Tauber (18) in the specific treatment of croupous pneumonia with Romers pneumococcic serum is further confirmed in a work by Schaffer (19). In a series of cases this author obtained most remarkable results. Soon after the injection of 10 c.c. of serum he observed a definite critical fall of temperature with sweating. In only one case was it necessary to repeat the injection. His success with the serum treatment leads him to regard its specific action as proved. Less favorable results have been obtained by others, but he attributes this to the fact that pneumococci obtained from different sources behave differently, and that all are not cases of diplococcus pneumonia. He accentuated the use of this serum early in every case even in those whose course indicated a benign infection.

DIAGNOSTIC AND THERAPEUTIC NOTES.

TREATMENT OF ARTHRITIS BLENNORRHOICA.—In the surgical clinic of the University at Kiel, every case of arthritis blennorrhoea has been treated, for the past four years, with Bier's hyperaemia. Most often surgical interference was not necessary and the results as to function were very good. Other advantages of the Bier's treatment are, the relief of pain, the simplicity and inexpensiveness of the treatment, the possibility of applying massage and passive and active movements at an early date, so that inactivity, atrophy and ankylosis may be prevented, and, finally, the shorter duration of treatment and better obtained results than by the older methods. (Alfred Mathies, Inaug. Dissert. Kiel, 1907.)

TREATMENT OF OPHTHALMO-BLENNORRHOEA.—(*Münch. med. Wochenschr.*, 1907, No. 41).—The preventive treatment of Credé is of value only in mild cases, according to Vincenz Fukala, of Vienna. He advises touching the conjunctiva palpebrarum, in cases of ophthalmoblennorrhoea neonatorum, twice daily with a 4 to 5 per cent. solution of nitras argenti, applied on a small cotton swab. In this way a cure is accomplished in a short time, without dangerous affections of the cornea. In acute cases of ophthalmoblennorrhoea in adults, this treatment is of value only when started in the early state, before abundant secretion is present. When fibrinous infiltration has set in, it is impossible to preserve the cornea. In adults a 5 to 10 per cent. solution of cocain is applied before the application of the nitrate of silver.

LOCAL TREATMENT WITH MARMOREK'S ANTITUBERCULOSIS SERUM.—Clement and Jacobson (*Journal des Practiciens*, 8 février, 1908), report a case of tuberculosis of the bladder, in a female patient, treated locally with Marmorek's serum. After eight months of the ordinary local and general treatment, the patient's complaint grew worse. She urinated 26 times in 24 hours, the urine containing pus and tubercle bacilli in abundance. Appetite bad, vomiting frequent, weakness. Twelve subcutaneous injections with Marmorek's serum had no effect on the bladder trouble. Finally, the authors injected every other day, after washing the bladder with boric acid solution, 5 cc. of the serum into the bladder, while 5 cc. of the serum were given per anum on the days between the injections. After 24 days the frequency of urination was diminished to 14 times in 24 hours, while the general condition of the patient improved greatly. The same treatment was continued for another 24 days, after which all her symptoms had disappeared. Tubercle bacilli were not found any more. One year afterwards the patient was again examined and no symptoms whatever of the tuberculous condition were found.

TREATMENT OF ACNE VULGARIS.—C. Herxheimer, Frankfurt a. M., publishes some very useful prescriptions for the treatment of acne vulgaris (*Deutsche med. Wochenschrift.*, 1907, No. 37). Our own experiences with these preparations have been very gratifying and for that reason we can recommend them highly. First, a lotion of the following combination:

Sulphur precip., 15.; aq. calcis, 45.; aqua amygdal. amar., 10. This lotion is applied at bed time to the affected parts by means of a camels-

hair brush. It is removed in the morning by washing with soap and hot water, while during the day a mild soothing ointment is used.

Second, a resorcin paste is applied and left on during the night; it is removed in the morning by first greasing the parts with cold cream and then wiping off with a moist wash rag. The prescription for this paste is as follows: Resorcin 10.; zinc oxydat 25.; talc. venet. 25.; paraffin liq. ad 100.

If a stronger action is required to accomplish peeling and a more rapid cure, the following paste is of value: Resorcin, zinc. axyd., talc. venet., aa 10.; paraffin liq. 20. This paste, after being applied, is removed after an hour, and some soothing ointment is kept on the parts during the following few hours.

TREATMENT OF PERITYPHLITIC ABSCESES BY MEANS OF PUNCTURE.—

Lenhartz (Aerztlicher Verein in Hamburg) reports 287 cases of acute appendicitis treated in "Das Eppendorfer Hospital" from January, 1905, to May, 1907. He advocates early appendectomy, advises the operation in the interval stage if possible, but is not in favor of opening every large perityphlitic abscess, on account of the dangers of this operation (loosening of fresh adhesions, peritonitis, abdominal hernia and long duration of the morbid process). To overcome these disadvantages, emptying the abscess by aspiration-puncture was tried by him. The results in the 287 cases mentioned above, were as follows: Early appendectomy, 34 cases, 3 deaths; incision of the abscess, 54 cases, 8 deaths; operation in interval stage, 61 cases, no death; abscess emptied by aspiration-puncture, 60 cases, no death. This report speaks for itself and the method should therefore be used next to other operations in suitable cases.

Lenhartz makes his puncture with a glass syringe of a capacity of 10 cc. and a needle 6 cm. long, sterilized dry. The skin is cleansed with ether, and the needle is introduced in the swelling, where the pain is most severe. The pus is then aspirated; the same operation repeated until the abscess is emptied. In some cases, up to 240 cc. of pus was drawn from the abscesses. If necessary, repeat the aspiration at intervals. In every case the temperature was noticed to drop and the number of leucocytes decreased.

DIAGNOSIS OF APPENDICITIS.—W. Janowski and St. Lapinski examined 800 men with apparently healthy appendices, palpating the appendix, the cecum and the points of McBurney and Lenzmann (6 cm. to the left of the anterior superior spine). Necessary for a successful examination is a thorough relaxation of the abdominal muscles and contraction of the musculus ileopsoas, which was accomplished by elevating the right lower extremity one-half of a meter. In 52 per cent. of the cases the appendix could be felt over the musculus ileopsoas. In more than 60 per cent. of the cases pain was produced by pressing the appendix, radiating in different directions,—to the stomach, navel, liver, or to the left. McBurney's point was often found painful, also when pressure on the appendix was not painful and when the appendix could not be felt, and also from here irradiation of the pain was observed. Lenzmann's point was painful in several cases, and where the appendix itself and McBurney's point showed no pain on pressure. Swelling of the appendix, pain on pressure of the appendix, McBurney's or Lenzmann's points are, therefore, not evidence of chronic appendicitis and the diagnosis has to be based on other symptoms.

CORRESPONDENCE.

LONDON LETTER.

(FROM OUR OWN CORRESPONDENT.)

It is vacation time in London, and the juniors on the staffs of the various hospitals are occupying the seats of the mighty and enjoying a foretaste of the pleasures to come when they in turn mature to "full" rank. The relief from class-work in the School and from out-patient duty in the Hospital makes a pleasant change from the monotony inevitable to those spheres of duty. The centre of scientific interest has been removed to "dear, dirty Dublin," where the British Association for the Advancement of Science has been holding its annual session under the presidency of Professor Francis Darwin, F. R. S. It is certainly in accordance with the eternal fitness of things that in the fiftieth anniversary of the first and epoch-making announcement of the theory of natural selection by Charles Darwin, a son of that truly great man should occupy this high office. Francis Darwin studied medicine at St. George's Hospital, and is a graduate in medicine of his University. He has never practiced, but has devoted himself to botany, of which he is now Professor in Cambridge University. Heredity will out, and the Professor in his address showed that he had not only inherited the faculty of patient and meticulous observation so conspicuously possessed by his illustrious sire, but has also not a little of the poetic imagination, which was shown by his grandfather Erasmus Darwin, the author of the "Loves of the Plants." There has not been a botanical president of the Association since Sir Joseph Hooker was in the chair at Norwich forty years ago. Sir Joseph was also a medical man, and served for a time as Assistant-Surgeon in the Royal Navy. The theme of the presidential address was the movement of plants and Professor Francis Darwin gave a general idea of the influence exercised upon plants by changes in the environment. In effect, he showed that in Nature no line can be drawn dividing things which are considered to be alive because they show some sort of consciousness, from those which are supposed to have no feeling. He claimed that though it was impossible to know whether or not plants were conscious, yet it was consistent with the doctrine of continuity that in all living things there was something psychic. The address was full of suggestive thought, and bore witness to depth of knowledge, long and careful observation, and ripe consideration. He brought a healthy and refreshing breeze into the mists of polemics that have been gathering round the principle of natural selection. Polemics upon any subject, it may be remarked, usually betoken an absence of observation. It was, the Professor observed, the fashion to minimize or deny altogether the importance of natural selection, but he was convinced that the inherent strength of the doctrine would ensure its final victory over the present anti-Darwinian stream of criticism. Somatic inheritance lay at the root of all evolution, and the enemy hypothesis of evolution made the positive value of natural selection more obvious.

The President of the physiology section, Mr. J. S. Haldane, Reader in Physiology in the University of Oxford, opened the proceedings in his particular section by an address on the "relation of physiology to physics and chemistry." He contended in the main that the physico-chemical theory of life held in recent times by the majority of physiologists—viz.: that physiology is the application to living organisms of physical and chemical modes of explanation—is untenable as a scientific working hypothesis; that in physiology and biology generally phenomena are dealt with which, so far as our present knowledge goes, differ not only in complexity but also in kind from physical and chemical phenomena; and that the fundamental working hypothesis of physiology must differ correspondingly from those of physics and chemistry.

Dr. F. W. Hewitt, the well-known anaesthetist and equally well-known as an authority, second to none, on the subject, read a paper on the prevention of deaths under Anaesthesia. The subject is important at all times, but has become increasingly so in the last few years owing to the occurrence of several unfortunate incidents. Dr. Hewitt urged the adoption of the following reforms: (1) to make it a penal offence for any person other than a legally qualified medical practitioner to administer an anaesthetic; (2) to improve and extend the anaesthetic departments of our hospitals by appointing experienced officers of the highest academic and professional attainments to the various offices of such departments; (3) to make a thorough course of instruction in anaesthetics a necessary part of the medical education of every practitioner; and (4) to require hospital authorities to register every anaesthetic administration within their respective institutions. Something of this sort will have to be done, for the use of general anaesthetics daily becomes far more frequent than before. At the same time it is a matter of grave doubt by not a few, who can look back for a score of years although not in the spirit of the *laudator temporis acti*, whether the present system of medical education does not lose sight of the first and most important lesson to be learnt by all who intend to practice medicine, generally or in any particular branch, the full knowledge of, and the due readiness to accept, responsibility. Distance being now practically annihilated by the telephone, it is much easier to ring up and ask how to tide over any difficulty than, as in pre-telephone days, to thrash it out for one's self.

The Report of the Army Medical Department for 1907 is not only interesting in itself as showing a great improvement in the health of the troops, both at home and abroad—an improvement which also extends to their morals—but it also marks the continuous progress in the official recognition of the importance of the Medical Department of the Army. Much of the general improvement in health is attributed to the increased attention now given to sanitary matters, not only by the medical officers but also by the soldiers themselves. In this particular connection excellent results are forthcoming from the Army Sanitary Institute at Aldershot under the able superintendence of Col. R. H. Firth, F. R. C. S., with whom the idea of a special sanitary service, as a distinct branch of the Medical Department, originated.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

Despite the confusion resulting from the diverse and often diametrically opposite opinions which have been expressed at the Surgical Society and the Academy of Medicine in their recent discussions, the question which arises is whether it is possible to form a definite opinion as to the value of antitetanic serotherapy.

One of the causes which seems to have contributed some obscurity to this question, the complexity of which is more apparent than real, lies in the fact that the observations of the researchers had to be adjudged from veterinary and surgical tribunals, so to speak, since both were appealed to at the same time. Now, the momentous point to remember is whether or not it is legitimate in all cases to draw conclusions from observations made in connection with animals so that they can be applied to man. Does not the latter show a special resistance to immunization caused by the introduction into his organism of a heterogeneous serum? Nevertheless, let us mention at once that it is no more justifiable to neglect the information derived from experiments on animals, when the study of the action of antitetanic serum is involved, than it would be in case the subject of antidiphtheritic serum was agitated.

As regards the experiments on animals, we are all in full accord that the antitetanic serum has no action whatever on developed tetanus and that this malady is without exception fatal. On the other hand, the preventive action of the serum is of decided value if its injection is given shortly after the manifestation of a wound, or better still, before the wound appears, as happens in the experimental cases.

To what extent these conclusions are applicable to man is the important question to decide. There have been reported many cases of recovery following large injections of the serum. Without denying the possibility of all this, it is well to recall that cases have been cured by very large doses of chloral and morphine. Hence we can not draw any conclusions from these exceptional cures. The intra-cerebral injections practiced by M. Borrel, of the Pasteur Institute, have not shown in man the happy results that were observed in animals. It appears then that in the case of man as well as in animals we can not proclaim with certainty the curative value of antitetanic serum. There remains the question of its preventive value. From the discussions which have taken place in the two learned societies of which we have spoken, we glean with considerable clearness that the action of the serum is decidedly limited, of short duration, and that it is necessary, in case the preventive benefits which it can bestow, are to be realized, the work must be done under favorable conditions; otherwise the many chances in its favor will not count for much.

The serum does not destroy the tetanic bacilli, does not prevent the germination of the spores and does not appear even to have any effect on the toxin already fixed in the nerve elements. Its rôle consists exclusively in neutralizing, by combining with itself, the toxin circulating in the blood. Therefore it is simply an antitoxic serum, similar to antidiphtheritic serum, and not an analogous bactericidal serum, such, for example, as antistreptococcic serum. Another fact most important to know is that the antitoxic rôle is very ephemeral and does not appear to extend beyond eight days. At the end of this time says M. Vaillard, if the tetanigenous wound exists still, if moreover there are local com-

plications which by microbic associations might facilitate the vegetation of tetanic bacilli, the secreted toxin will no longer find antitoxin for neutralization, nor will the usual good effects be produced. If, on the contrary, the amount of antitoxin is renewed at an opportune time, the preservation of life will be prolonged a certain length of time.

The conduct of a case should be influenced by two rules; first, by the immediate injection of a sufficient dose of the serum, ten or, better still, twenty or thirty cubic centimeters, a fresh injection of ten cubic centimeters every eighth day so long as the wound persists; and, secondly, where antiseptics, surgical intervention and the actual cautery are necessary, to destroy or locally suppress the morbid germs which might contaminate the wound. These two rules should be observed in all cases where the wounds are deep and infected, where there is considerable destruction of tissue and in complicated fractures. The local disinfection is at least as important as the injection of serum, since the bacillus of Nicolaier can germinate in a wound even after days and weeks of incubation, leaving us ignorant of its presence until the moment when reactions in the nervous system signalize its impregnation by the toxin.

The employment of antitetanic serums, as that of all serums, may lead to untoward disturbances. Some are benign and of short duration, such as partial or general erythema, urticaria, arthralgias, myalgias and localized edemas. And the same disturbances may recur after reinjections. Again, it has been noticed that after injections of antitetanic serum, tetanic phenomena appear; these symptoms, however, are transient and without gravity and should not constitute a contra-indication against the use of the serum.

Even when all antiseptic precautions have been taken, and the injection has immediately followed the appearance of the wound and the doses have been sufficiently large, the malady may run its course until it ends fatally. And here it is well to recognize the fact that there are certain phenomena that are elusive enough to escape our attention, notably the one which has been observed *in vitro* by M. Roux. According to this researcher there takes place in the inoculated serum so decided a dissociation, that a certain quantity of active toxin is set free. Therefore associate infections and the influence of hyperthermia are to be regarded as matters of real importance.

To sum up, though we are yet incompletely armed in our fight against tetanus, the fact remains that the means are at hand to exercise prevention with considerable show of success, by asepsis of the wound and neutralizing the toxin by injections of the antitetanic serum, provided their quantity and number are correct.

THE SOCIAL PROBLEM.

TO THE EDITOR:

Your editorial on "The Omnipresent Sexual Question" does not take into account two causes for the unsatisfactory results of the mass of medical literature on the subject,—causes more prominent than lack of unanimity of opinion. The one cause is the restriction of publicity to the medical press, which never reaches the laity and which is mainly concerned with the medical aspect of the problem. The other cause is the lack of initiative and energy on the part of the profession in handling a sociological problem in which the medical phase is but one of the many phases presented.

The social evil is not a problem which can be worked out to a Q. E. D. solution; neither is it a disease which can be treated on general lines like a simple bronchitis. Every case has its individual etiology and requires individual treatment, the medical treatment of a venereal disease present being incidental though important for the restoration of the person affected.

Notwithstanding the diversity of opinions, ranging from those of the impractical idealist, who would convert the world into an elysium at the word of command, to the opinion of the nihilist, who would do nothing, some good has been, and much more could be done if practical and aggressive measures were instituted.

The medical profession is clannish, its position as adviser to the laity placing it on a supposedly more exalted plane than the rest of humanity. Its mentality is concentrated on its mission to heal the sick and prevent disease. In sociological as in municipal problems it takes a general, often only a passive, interest; indeed, there are but few who are not Laodicians in combating social evils and ills apart from their medical sides. Unfortunately the medical press has little if any influence outside of the medical profession. To achieve definite results in its efforts to improve moral and social conditions, it must arouse the public, either through the public press or through aroused physicians. The question involving the public welfare should receive public discussion, but the physician can, if he will, take the initiative in bringing about such discussion. The profession has succeeded in arousing the public to a realization of the dangerous practices which spread tuberculosis. It can do the same with the social evil. Here, however, it must make the medical phase concomitant with and not superior to the moral, social and economic questions involved. The spread of venereal diseases is the factor most directly appealing to the physician and the one upon which he lays most stress. The moral menace to virtue, the social menace to the sanctity of the home, the economic menace to the public purse, must all be considered, as well as the physical menace to the votaries of vice. Every lewd woman is a moral, social and economic menace to the whole community, while only those who are diseased affect their patrons and indirectly the families of the latter.

In an article on prostitution, published in the *New York Medical Journal*, August 8th, 1908, I said "the inherently vicious will remain in spite of all suppressive and repressive measures and there are enough of this class to supply the demand of those who require their services." All others are amenable to treatment. Those suffering from physical defects are subjects for the physician; those driven to their calling through economic conditions should be the charge of the philanthropist. When the fault is due to social conditions, the lawyer or minister can intervene; while the large class who fall or are liable to fall through ignorance of moral and physical laws, should be the concern of parents and teachers.

One of the fundamental causes for immorality is a moral turpitude or dullness produced by the continual use of alcohol from childhood. To show the demoralizing effects of alcohol taken this way lies within the province of the physician. It is hardly necessary to refer to the low moral tone pervading the wine and liquor drinking countries.

Another prominent cause in this country is the lack of domesticity. In our efforts to make our children self-reliant, we hold them under such a loose rein that they break away from the family circle as soon as they

become self-supporting. There is lacking that intimate relationship between mother and daughter that is seen in the German home, and owing to this lack of confidence between them the daughter gives her allegiance to a lover as soon as she is old enough to have one. Even here the family physician can exert some influence. To achieve results on a large scale, he must step down from his exalted position as physician and become for the nonce, a man of the world taking part in the community's welfare and the world's problem. Doing this in so worthy a cause will not lower his dignity nor impair the respect shown him as physician, but it will insure him a respectful hearing and enable him to take the initiative in a noble work.

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OBITER DICTA FROM FOREIGN JOURNALS.

PRAGMATISM IN MEDICINE.

Since pragmatism is the habit of philosophical thought, to-day, in all its divers ramifications, its application to the practice of medicine should be of enough import to interest those medical practitioners of a scientific turn, who not only have at heart the welfare of their patients but are ever willing to be benefited by the currents of thought as they proclaim for illumination and modernity. Hence the following article by Dr. Louis Rénon, of the Faculty of Paris, in a recent number of the *Gazette Médicale de Paris*, should not be overlooked as a step towards the benefits which may be derived, in the province of therapeutics, from a fuller comprehension of "the science of practical sense and action." The science of therapeutics to-day is inundated with many theories, to the detriment of the sick. Symptomatic therapeutics has a rival in pathogenic therapeutics. But since the pathogenesis of the majority of patients is yet unknown to us, pathogenic therapeutics is merely a matter of medical theories, and the result is that we are docile witnesses to an ataxia of rationalistic therapeutics. Year after year, medicines which were considered excellent the year before, fall into disrepute. Year after year, there is a rehabilitation of these medicines. And year after year, in the name of reigning theories, we are promised the cure of such and such a plague. And remember the promise is not of yesterday.

The accumulation of all these deceptions has driven doctors into scepticism and inaction. Therapeutics is frayed and tattered, disdained and scorned. It has come to pass that its study is prosecuted only by those minds who persist in believing that the mission of the doctor is not one of indifference and callousness to the use of drugs, so that patients may resort to quacks who well know the practical worth of the following maxim by La Rochefoucauld: "Hope, the deceiver, at least makes good at the end of life by leading us along a pleasant route."

Is it possible then to react against these tendencies? It is, because if we consider what is occurring to-day outside medicine,—in the other sciences and in philosophy,—we are struck with the idea that hesitation is characteristic of certain savants and philosophers in their researches of what is thought to be the absolute truth. Already a reaction is forming against excesses in rationalism and intellectualism. Now it is a fact that the pursuit of absolute truth often gives rise only to deceptions for the exact rest, for the most, on hypotheses, and are capable of illuminating only relative truths. Ignorant of the true essence of the phenomena, their knowledge extends only to the relation of phenomena to each other. But even though the truths are relative, this does not prevent science from constantly progressing, a fact the importance of which in our practical life does not pass without appreciation. Now this scientific tendency is in accord with the philosophic evolution as it has been evidenced in the last fifteen years by distinguished Anglo-American thinkers, who have opposed to German and Latin rationalistic philosophy, a new philosophy, namely, pragmatism. According to

Charles Fiessinger's "Science and Spiritualism" (Science et spiritualisme, Paris, 1907) this new philosophy is spreading much more in the Anglo-Saxon world than with the Latins.

What is pragmatism? The word is derived from the Greek *πραγμα*, which means to cause action. It is the philosophy of facts, the philosophy of practical life, the philosophy of results, of experience and action. "To a pragmatic," says M. Gustave Le Bon, "there is neither truth nor error, only results. Utility and truth are synonymous."¹ Is it possible then, is it even desirable, to apply these ideas to medicine, to create a pragmatic medical doctrine? If we look up the word pragmatic, *πραγματικός*, we see that a pragmatic is one who studies facts in themselves, in their relation to action, efficacy and energy; therefore we can not but admit that for medicine to be comprehended, it is necessary that it should be pragmatic. Now medicine, as is well-known, is the science of acute observation and is often pragmatic without being aware. Medical pragmatism is not medical empiricism, even though we regard the latter in its true and literal sense *εμπειρία*, experience. It is another matter, or, better still, it is something more. For it is the experience of all results and of their origin, whether traditional or due to the most recent scientific researches. In other words, it is empiricism allied with science—scientific empiricism—and despite the apparent contradiction contained in the term we have here empiricism availing itself of all the means which science places at the disposal of medicine. Similar to the experimental medicine of Claude Bernard, pragmatic medicine is "by nature a sort of antisystematic and antidoctrinal medicine," since "it is free and independent in all its essential points, and has no desire to attach itself to any one system of medicine."² Or as Professor Dieulafoy has said: "A clinic derives its strength and sustenance from many sources."³ Therefore pragmatic medicine should follow these precepts and take unto itself all methods of examination. There should be neither neglect of auscultation, nor of the latest ideas as to immunity; further, a diagnosis if verified only by Wassermann's reaction has a specific value. Pragmatic medicine should be avid of all theories save those weak, sterile and disparaging ones of the rationalists—theories which lead to indifference and scepticism.

If pragmatism is to have any worth or value in medicine, it should apply itself above all to therapeutics,—the logical conclusion of the practical and active features of a clinic. Pragmatic therapeutics, no matter what its origin, utilizes all the medicaments which help the sick. It has no foolish or exaggerated pride but judges only from obtained results. It has recourse to the therapeutics of the past,—rest in bed and strict diet,—measures which date from the early ages of medicine; it borrows and puts into use such excellent medicaments as local blood letting and the cautery, so useful in cardiopathy. It does not disclaim the marvelous drugs, colchicum for instance, remedy since many hundreds of years for gout; mercury, digitalis, etc. It assimilates divers pharmacopeias, English, Swiss and American, those storehouses of precious knowledge; and even draws upon the homeopathic book for knowledge of some excellent drugs. It draws sustenance from the chemical,

(1) Gustave Le Bon.—*Philosophie et religion. Leur évolution nouvelle: le pragmatisme* ("L'Opinion," 11 avril, 1908).

(2) Claude Bernard.—*Introduction à l'étude de la médecine expérimentale*, édition de 1903, p. 350.

(3) Dieulafoy.—*Manuel de Pathologie interne*, 15 édition, 1908, t. I., p. 45.

physical, natural and biologic sciences. It utilizes the synthetic progress of organic chemistry, the progress of physics, the advances made by physical chemistry, the x rays, radium, the colloids, medical ionization, indigenous and exotic plants, as well as all the discoveries of the Pasteurian school. It is versed in physiology and recognizes the treatment of the functional troubles of the glands by physiologic opotherapy. It is no stranger to kinetotherapy, phisiotherapy, climatology, and to hydro-mineral cures. It is not unacquainted with the minutest causes which may produce rather disastrous results in the sick; and, convinced of the importance of these details, it always makes it a point to mention them. It emphasizes the importance of dietetics, the sort that rests on experience; and is opposed to a draconian regimen resulting from too close a consideration of digestive physiology and physical alimentation. It individualizes the treatment in each particular case, protects itself from all impossible systemization so that it may comprehend the diversity between heredity and acquired pathological changes stamped on each morbid case. Far from resembling the idea that it is criminal to speak of a province in medicine, it recognizes not only a natural but a pathological one. It is convinced of the enormous influence of the mind over the body, thus agreeing with those who hold that psychotherapy should be counted among our various remedies. It does not regard suffering mankind as a rabbit or a guinea-pig, not being matter of fact enough for this, since sentiment is one of its influential factors. It is the incarnation of hope, full of promises, never arriving before human suffering empty-handed, always buoying up with a positive answer and never depressing with a negative. In short, it is the Good Samaritan of whom Professor Albert Robin spoke so feelingly, at his opening lecture on clinical therapeutics, when he said, "the patient who feels himself in the presence of this new science realizes that the lambent flame, which means life to him, gradually grows until its strength and brilliancy buoy up his drooping spirits."

Pragmatic therapeutics is not a reactionary note in the researches for medical truth. Awaiting, as we are, the time, which is yet quite distant, when the scientific solution of all the medical problems will obtain, the new movement is a force in evolution, active, always in the vanguard of progress. It is ceaseless in pursuit of what is new, provided the matter is useful; accepting even theories put forward to bring about action, though later on they may be discarded. In a word, pragmatic therapeutics is the science of practical sense and of action.

A SIXTEENTH CENTURY PHYSICIAN'S IDEA OF PHILTERS.

In his Paris thesis, Dr. Dubédat has an interesting study of the Gascon physician of the sixteenth century, Joseph Du Chesne, signor of La Violette, known as Quercetanus, in which he shows to what extent the best informed people of that epoch really believed in the virtues of philters and the magic of sorcery. Beverages disposing to love were in great vogue and even a goodly number of years later their popularity did not wane. To substantiate his statements, Dr. Dubédat cites a number of interesting facts taken from the numerous books of Du Chesne. Speaking of beverages, the Gascon writes: "Many women not content with their physical attractions as a means of drawing attention

to themselves, drink freely of amatory beverages to increase their attractiveness, thereby hoping to subjugate and enslave those who happen to be in their train. The Emperor Caius was so liberally dosed with an amatory drink by his wife that finally he broke down, physically and mentally. Cornelius Gallus, Governor of Egypt in the time of Augustus, on account of a similar beverage, became maniacal, according to Eusebius in his 'Chronicles.' This author also mentions that the poet Lucretius developed insanity after drinking a potion prepared by his wife, Lucille, and after some months committed suicide. It is said that the principal ingredient of all these beverages was hippomane. It has been reported to me that the potions that are given to create a feeling of love are so diabolical that to give them is unworthy of all Christians."



J. Baker sculp. London

ALBERT HALLER.

HISTORICAL NOTES.

ALBRECHT VON HALLER.

Precocity counted for much in the life of Albrecht von Haller, the two hundredth anniversary of whose birth will be celebrated, with fitting ceremonies, by the University of Bern on October 16th. But precocity was not all, since this scintillant mental manifestation did not stop at maturity, as so often happens, but was merged into a service of knowledge whose shining energy deserves the high word of wisdom. History records that a Greek called Charmidas could repeat from memory the contents of the largest library: that Mlle. Clairon, the actress, when a child could repeat more than two hundred verses from the tragedy (*Le Comte d'Essex*) and two-thirds of the little play (*Les Follies Amoureuses*); that De Quincey was so proficient in Greek, in his thirteenth year, that one of his masters said of him, "that boy could harangue an Athenian mob better than you or I could address an English one." And thus it was with Albrecht von Haller. According to J. G. Zimmermann, his pupil and biographer: "In his ninth year, Albrecht compiled lexicons containing all the Hebrew and Greek words, their origin, definition and use, to be found in the Old and New Testaments. He also wrote two thousand biographies of celebrated men, after the manner of Bayle and Moreri. An unquenchable desire for arduous and laborious work was even at this time manifest. His ambition, his perseverance, his diligence and his remarkable patience, were ever on the increase so that all knowledge was possible to him."

But what we medical men of to-day praise in this outstanding figure in the history of medicine, is the genius which set itself to work on lines the echoes of which are even with us now. Albrecht von Haller saw the necessity for the continuance of research in anatomy and physiology; he was determined in their cause to evolve that which would prevent their being a mere guttering flame: a new aspect was given to physiology, and the doctrine of muscular irritability was evolved. As teacher and researcher he easily outclassed all contemporaries, as was shown during the 17 years of his occupancy of the chair of medicine, anatomy, botany, and surgery in the newly-founded University of Göttingen. There his work was enormous. Aside from his professional duties, he worked diligently at botany and physiology; composed poetry which, in these perilous modern times of higher criticism, stands the severest test; and conducted a scientific journal "to which he is said to have contributed 12,000 articles relating to almost every branch of human knowledge."

The industry of Albrecht von Haller must strike the modern mind as an instance so extraordinary that in the whole sweep of medical history his equal for work can not be found. That this is not true we have but to read of all those men of wide outlook and genius for work,—men, some of them coeval with Haller,—whose messages are written large across the pages of almost all modern medical books. To protest the inefficiency of subjects, thereby calling into play the talents of perseverance, endurance and industry may not be the sort of genius that blinds the onlooker; but its fruits are of so good a vintage, that out of them there passes to future generations, a knowledge that bites deep into science. And of the fibre of the makers of scientific studies was Albrecht von Haller.

BOOK REVIEWS.

A TEXT-BOOK OF DISEASES OF WOMEN. By J. Clarence Webster, M. D. (Edin.), F. R. C. P. E., F. R. S. E., Professor of Obstetrics and Gynecology in Rush Medical College, in affiliation with the University of Chicago. Large octavo of 412 pages, with 372 text-illustrations and 10 colored plates. Philadelphia and London: W. B. Saunders Company, 1907. Cloth, \$7.00 net; half morocco, \$8.00 net.

Space does not permit us to enter here into a detailed consideration of this latest text-book of gynecology, or to critically review the author's position in the various questions at present under discussion among gynecologists. Webster is known as an investigator, as an inventor of new and original operations and as an excellent operator; thus he certainly is well equipped to produce a valuable and interesting text-book of gynecology. But this volume presents the subject in a distinctly attractive and most readable manner, an advantage which must be appreciated especially by the student and the general practitioner, and for the benefit of the latter we quote the following from the preface: "Owing to the marked surgical trend in gynecologic practice during the last twenty-five years a narrow specialism has been evolved which has resulted in the establishment of a school whose motto is Michelet's dogma—*Le bassin c'est la femme*—and whose remedial measures are limited to different forms of mechanical procedure—from passing a sound to extirpating the appendages."

"The accusation of the broad-minded physician that gynecologists tend to ignore many factors, other than those of pelvic origin, which are productive of neuropathies in women, is a well-merited one, and the majority of specialists must acknowledge its force. It must also be admitted that there is much truth in the counter-charge, brought by the specialist against the general physicians and neurologists, of a narrow sciolism which fails to estimate the significance of local pelvic phenomena, either from reckless disregard of them or from inability to make satisfactory physical examination of the pelvis."

STOEHR'S HISTOLOGY. Arranged upon an Embryologic Basis. By Dr. Frederic T. Lewis. From the Twelfth German Edition. Sixth American Edition.

With 450 illustrations. Philadelphia: P. Blakiston's Son & Co. Price \$3.00.

This volume represents the interesting experiment of arranging a text-book of histology upon an embryologic basis. The plan of teaching in American medical schools apparently makes such an arrangement highly desirable and thus, with the permission of Professor Stoehr, his well-known text-book in this sixth American edition has been completely rearranged to accord with this embryologic plan. The additions, omissions and changes of necessity are so numerous, that in a special note Stoehr asks his American colleagues to consult the original German work, if they find in the translation a view expressed which they do not consider correct.

A COMPEND OF OPERATIVE GYNECOLOGY. By William Seaman Bainbridge and Harold D. Meeker. Published by the Grafton Press, New York.

The object of this little book is to serve as an aid to the students taking the course in operative gynecology on the cadaver at the New York Post-Graduate Medical School and Hospital. It is based on the lectures delivered by Bainbridge. In very brief form the technic of all the typical gynecologic operations is described.

THE OPERATING ROOM AND THE PATIENT.—By Russell S. Fowler, M. D., Professor of Surgery, Brooklyn Post-Graduate Medical School, Brooklyn, New York. Second Edition, enlarged. Octavo volume of 284 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company. 1907. Cloth, \$2.00 net.

Well put for students, nurses and beginners, and a book that has many useful points of information.

ABDOMINAL HERNIA. Its Diagnosis and Treatment.—By W. B. DeGarmo, M. D. (New York). Published by J. B. Lippincott Company, Philadelphia and London.

This book must be meant for the general practitioner in large part, as it gives full and complete details, illustrated by the manufacturer's cuts, for fitting any and all trusses.

There is, however, a fairly satisfactory consideration of the operative treatment, and the author has been most thorough in his collection and presentation of the numerous articles on herina. In this we think he has done a good service, and as a compilation of the operations of various surgeons with their authors' illustrations it will be a good reference book.

ALTE UND NEUE GYNAEKOLOGIE. Festschrift fuer Geheimrath Professor Dr. Franz Ritter von Winckel. Herausgegeben von Professor G. Klein. Muenchen. J. F. Lehmann's Verlag. Price Mk. 12.

This interesting volume is dedicated by his former pupils to Professor Winckel, of Munich, on the occasion of his seventieth birthday. Indeed no better manner of honoring a venerable teacher could be conceived than a "Festschrift,"—a volume filled with the original contributions of men who in this way very appropriately express their gratitude to their master. The "Festschrift" is a typically German custom, but one that certainly deserves to be imitated by all nations.

The volume before us is edited by Professor Klein, who is known equally well as gynecologist and medical historiographer. Hence we are not surprised to find, as the first three essays, the following: Pictorial Representation of the Female Genitalia from the Ninth Century to Vesapius; A Spanish Treatise on Fertilization and Pregnancy, written in 1495; and Famous Obstetricians of the 16th and 17th Centuries. All three articles are by Klein, who also contributes papers on Retroflexic Uteri, on Scopolamine Anesthesia, and Spinal Anesthesia for Gynecologic Operations. Among the other numerous contributions to this excellent volume we may mention those on Blood Examinations in Gynecology, Hot Air and X Rays, Prognosis of Ovarian Tumors, Permanent Results of Operations for Prolapse, Difference in the Duration of Labor of European and Japanese Women, etc. The book work and illustrations are splendid.

HANDBUCH DER GYNAEKOLOGIE. Herausgegeben von Professor J. Veit in Halle. Zweite Auflage. Zweiter Band. Wiesbaden, J. F. Bergman. 1907. Price Mk. 15.

The second volume of Veit's well-known Handbook of Gynecology contains the following contributions: Gonorrheal Infection of the Female Genitals and Urinary Tract, by E. Bumm of Berlin, and Professor Doederlein's (of Tuebingen) two chapters on Inflammations of the Uterus and Atrophy of the Uterus. The other half of the volume, approximately 250 pages, is devoted to a discussion of the Diseases of the Female Urinary System; the name of the author, Professor Stoeckel, of Berlin, is ample guarantee of the excellence of this treatise, which in reality is a manual of urology.

Those familiar with the first edition of this work will readily recognize the fact that the changes made in this new edition are very thorough and decidedly to the advantage of this valuable work.

A STUDY OF THE HUMAN BLOOD VESSELS IN HEALTH AND DISEASE. By Arthur V. Meigs. Philadelphia and London: J. B. Lippincott Co.

The book of Meigs is a most important volume, particularly because of the very large number of observations made for it with the special object of establishing the value of many anatomic points hitherto neglected, not so much in regard to the arterial system as for the veins and capillaries. The chief object of the author is apparently to ascertain the changes that occur in vascular structures under normal or pathologic conditions. While similar studies have been presented by investigators in our own country and in Germany, they have been confined to a limited number of the blood vessels. Meigs has extended his investigations to cover the entire vascular system and his interpretations of the findings are accompanied by numerous beautiful illustrations. The volume is therefore a source of valuable information in the study of the physiologic and pathologic alterations that occur in the circulatory system. It is objective in its assertions and opinions for the reason that not only is the morphology of these structures considered, but also the changes in their functional and biologic relations. This latter feature makes the book very interesting reading, although the author in many instances disregards the results that exact physical investigations of the circulatory organs have brought out. The book must be read with a critical spirit.

INFLUENCE OF FOOD PRESERVATIVES AND ARTIFICIAL COLORS ON DIGESTION AND HEALTH. I. BORIC ACID AND BORAX. By H. W. Wiley, U. S. Department of Agriculture, Bureau of Chemistry. Government Printing Office.

The work of Wiley on the effects of the addition of borax and boracic acid as preservatives of food products, and their harmlessness or dangerous effects upon the consumer, has been done on the broad basis of exact chemical and experimental lines. The result has not been startling as the positive demonstration of harmfulness has been established for conditions that, under our mode of life, will rarely be fulfilled. There was no doubt in the beginning,

that the administration of large amounts of these substances would cause certain physiologic phenomena, and that continued ingestion, even of small quantities, would possibly lead to certain disturbances. This is what Wiley has proved. How far this can be utilized in legal and official ways is difficult to determine, and much less is it possible to prove these things practically. The bad effect of adulterated food is in most cases based on altogether different causes than that of the addition of some borax or boracic acid. The results of Wiley's work are not sufficiently definite to justify a change of conditions that at the present are not in the great majority of cases due to a fraudulent or deceptive cause, but are the outcome of economic conditions of a local or general character.

THE HARVEY LECTURES. Delivered under the Auspices of the Harvey Society of New York. 1905-1906. J. B. Lippincott Co. Philadelphia, 1906.

The purpose of the Harvey Society, founded in 1905, is to make accessible, for interested persons, all literature on the modern advances of medical science, through a course of lectures delivered by authoritative workers in the different subjects. These lectures are intended to be not so much accounts of work done by the lecturers, as a broad interpretation, from the laboratory standpoint, of subjects of general interest. They include a résumé of the experimental work and a critical review of the most recent advances. The historians are selected on account of their special adaptation, through their own research work on the subject presented by them. The present volume, representing the work done by the Harvey Society in 1905-1906, is a demonstration of the earnestness and directness with which this attempt is made. The success is great, as seen from the fourteen lectures published in the book, which comprise the most diverse problems of biologic and medical science. Each lecture is a jewel and as all are alike in value, a reference to any single one would give it undeserved prominence over the others. The aim of the Society is a high and noble one and it is to be hoped that besides those so fortunately situated that they can personally attend the lectures, many others may be benefited by publication of the lectures in book form.

NEUROGRAPHS. Editor, William Browning. Vol. I. No. 2. Published by Albert T. Huntington, Brooklyn, New York.

This volume of the Neurograph Series is called the Huntington number. It is concerned with a history of the disease which is known as Huntington chorea, a reprint of his original paper and numerous single contributions which deal with various phases of the subject, by well-known writers. Strümpel has a casuistical paper; Lannois and Paviot a résumé of the pathology; Osler a historical note; Jelliffe a note on the history of the disease; Tilney describes a family in which the disease can be traced back to colonial times; Dieffendorf touches upon the mental symptoms. There are other short papers dealing with Huntington himself as a physician and a man, and finally a note on the geographical distribution. This is a valuable monograph because it contains practically all that is known of Huntington's chorea, collected in such a way that it is readily accessible. It is well that the services rendered to medical science by Huntington should be adequately recognized; this the monograph does in a very clear, dignified and interesting way.

DISEASES OF THE NERVOUS SYSTEM. By H. Campbell Thomson. W. T. Keener & Co., Chicago. 1908.

The author of this book attempts to marshal the main facts of neurology in a concise and readable manner. In doing this he was fully aware of the difficulties involved; this he freely admits in his introduction. It is probably due to the full realization of the limits which of necessity apply in an attempt of this kind that has made possible so satisfactory a short treatise. In looking over the book one is struck chiefly by the care which the author has exercised in marshalling his facts and in arranging his material so that the succession of subjects falls naturally and logically. His description of disease types is clear and written in that precise, though readable, English which is found so frequently in books by Englishmen. There is of course little that is open for comment in so modest and restricted an attempt, but it ought to be said that for some reason or other this little treatise gives a distinct sense of satisfaction to the reader. The avoidance of discussion, the clean cut descriptions, the feeling of sincerity and the cleverness with which the illustrations have been selected and reproduced account for this. It is altogether the most satisfactory of the smaller text books on neurology. When the great number of these is considered, there is sufficient praise in this distinction. The make-up of the book is especially commendable.

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EDITORIAL.

AN AUSTRIAN SURGEON IN AMERICA.

In the voluminous book which some future historian will see fit to publish on the subject of the effect of foreign criticisms on our sensibilities, the interesting letters of Dr. Paul Clairmont, "Surgical Impressions in America" (Chirurgische Eindrücke aus Nordamerika*), should have the place of honor; for to his task he has brought a mind unhampered by few, if any, national prejudices, and a judgment that makes possible the correct appreciation of the ethnic traits which have been responsible for the growth of American surgery. To divorce race characteristics from progress in any branch of science would be an oversight, unworthy a philosopher who wishes to get at the root of the why and wherefore of a sociologic manifestation; hence, we ought not to quarrel with Dr. Clairmont in his desire for this sort of illumination, but rather encourage it, since, unlike most of our foreign critics, he refuses to allow minor defects in our social economy to blind him to the aims and high purposes of an important branch of science necessarily silted up to some extent in the practical and somewhat "dreary sands of modern life."

The reason why it is often the case that a pure intelligence, when transported to this country, allows itself to drift into fulsome praise or scathing denunciation, is easy of comprehension. On the one hand, the junketings attending a stranger's sojourn may be of so sweeping a nature that mental equipoise is swamped; while on the other, even the highest intelligence is not proof against an egoistic measure of its own fame, when fed by the praises of a clique of admiring under-graduates in the foreign university where it is held in high esteem. Now though Dr. Clairmont has had the same environment that has been part of the life of the majority of our foreign medical critics—he is Privat-Dozent and Assistant at the I. Surgical Clinic, University of Vienna—he evinces none of the

*Wiener Klinische Wochenschrift, 23, 30 Juli, 6 August, 1908.

small, but very objectionable, conceits arising from adulation falling on too fertile soil; from which we infer that either his modesty plus his good sense stood him in good stead, even when the balance turned towards Austrian surgical methods, or that the impress gained during his visit was sufficiently deep to be educative on lines unappreciated in Austria.

That Dr. Clairmont's countrymen will profit by reading his truthful letters, is a foregone conclusion; for he brings before them not only a detailed account of our most modern hospitals, but describes the operative methods of such men as the Mayos, Cushing, Murphy, Deaver, Young and Halstead. And his descriptions are not of the perfunctory sort, but are informed with the true spirit of the impressionable and sympathetic onlooker who, while noting each step in an operation, digests enough of the operator's manner to profit by it in case he feels that perfection has not been reached by methods to which his schooling and experience have inured him. We feel this to be the case, for even though at times the sweep of our methods astound him, his mentality soon gets back its accustomed poise, and with a grace that is not unworthy of imitation by some of our own countrymen, whose boorishness when abroad is proverbial, he admits their superiority to what he has seen elsewhere. But in regard to other matters he is less willing to yield the palm—our decided lack of unanimity as to when an operation for appendicitis can be performed with the least danger to the patient; our deplorable ignorance of immediate prosthesis after resection or extirpation of the lower jaw. But even when speaking of these defects he is never arrogant nor severely critical; only astonished that in a country where so much in surgery has been achieved, there should be one lacuna to invite criticism.

After years of patient endurance to the jibes and sneers of visiting foreigners, who have reciprocated the hospitality extended them by literary insolences on our shortcomings, whether social or scientific, it means much to us to read these letters. For, aside from their high appreciation of our surgical work, their refinement of literary style and the kindness that breathes from every line, they are compact of all those socio-economic virtues which, on account of nearness, unfortunately escape us in our estimate of ourselves. But that they are of importance in any correct estimate of our position as an intellectual force in the international program, a foreigner of the stamp of the author of "Surgical Impressions in America" can best appreciate; for without them, we fear, the present achievements of American surgery would not be the outstanding feature, which just and unbiased critics admit it to be when brought into close juxtaposition with the high lights of its supreme efforts.

MR. RUDYARD KIPLING AND THE MEDICAL PROFESSION.

Assuredly the author of the "Jungle Books" reverences truth above all things for his latest public utterance—his address at the opening session of the Middlesex Hospital—is so strong a plea in the service of truth that a quick understanding, on the part of all intelligent laymen, of the Leit-motifs of modern medicine can not but be effected. The charge generally brought against the man of literary parts, that misconception always results when he endeavors an exposition of a scientific subject, because of his accustomed indulgence in wealth of diction and surplus of imagery, must be withheld this time, for, though there might have been temptations to romance a bit on so interesting and fascinating a subject as the modern phase of the science of medicine, the author saw fit to bridle his imagination in so skilful a manner that mere wording gave way to point and precision. Rather reluctantly but not grudgingly we must admit that of all the October speeches delivered at the English medical schools and hospitals—and the names of Allbutt, Slater, Broadbent and Sainsbury, are not especially insignificant—the arguments Mr. Kipling advanced will do more to dissipate the Cimmerian darkness in which so many of his fellowmen live, for the reason that his vigorous and concise words, so characteristic of the best points in the literary trajectory with which he has made us familiar in the past, will be reprinted in the lay press: thus accomplishing a much desired purpose. For reasons only too obvious, the highest thoughts in the writings, and even in the speeches, of the purely scientific surgeon and physician, are rarely reproduced in the daily press, and though this ought not to be a subject for congratulation, since some, if not all of them, are worthy of that sort of dissemination, still when we remember how often scientific words and expressions are garbled by attempts at popularization, we must feel grateful when no notice whatever is taken of them. Now since it is wellnigh impossible to convince experimental researchers of the necessity of bringing their matter more directly before the public, by using simplicity of language so that the popular ear may be enlisted, it is with a sense of deep gratitude that we read the pronouncements, on the subject of experimental research, by one who has the judgment to liberate himself from many technicalities, and, without any apparent travail, defines the distinct and positive progress of the medical science of to-day.

A scientific idea, or the fruition resulting from its application, with all its benefits, should not abide long in its own house: but even though the fulfillment of its purpose is not accomplished, enough of it should be allowed to enter the universal life to make men who think, aware of the undercurrents agitating the so-called dead level of modern

medical thought. Universality as an axiom governing the tendencies of modern thought, should include the best dictates emanating from the province of what one might call higher medicine, just as it already commands and receives the best pertaining to philosophy, metaphysics and religion. So soon as our experimental researchers shall recognize the worth of universality as a power for good, in so far as it does not mean the popularization and debasement of scientific thought, there will be none of the many misunderstandings and misconceptions which obtain to-day, but a generous appreciation and an elevation to the high plane on which now rest, in the public mind, the best fruits of philosophic and literary thought. Then and then only will the public utterances of a recognized experimental researcher have the weight and value of the unfettered literary talent of a Rudyard Kipling.

THE TRAINED NURSE: HER PERFECTIONS AND IMPERFECTIONS.

It does not require remarkable alertness of perception to recognize that in the various callings of life the material which goes to swell the ranks has more than an iota that invites criticism. That the fault always lies in the quality of the human stuff and not with the educational perversions which are unwittingly bestowed and encouraged; is a declaration of a bias which should at once be deprecated, for it is open to the day for him who has but a modicum of perspicacity, that when the wrong sort of the human genus is allowed to bask in the full rays of an education that is somewhat darkened by defects, it would have to be more than human to have the capability to separate the chaff from the grain. Now of all the professions that have come under our critical eye for illumination of hitherto unnoticed evils, the teaching of the art of nursing and its malformations, as evidenced by too many nurses, are not troubles of the imagination, but real troubles that have stiffened us against the persuasive words of those whose optimism allures them into seeing only the obverse side of the picture.

Imprimis, it would be well to remark here, that by far the greater blame for the travestied sort of education nurses are supposed to profit by to-day, falls to the share both of the doctors who are directly their teachers and the doctors under whom they work after completing their course. In respect of the former who are their real educational guides, their trainers, their censors, has it ever occurred to many of us how ridiculous are certain parts of the nurses' curricula, supposed to appeal with special relish to the palate of a comparatively untutored and unformed mind? The usual sort of young woman who enters a school

for nurses has before her enough stumbling-blocks, due to disadvantages resulting from a crippled early education, in the mastery of her new environment—the scientific atmosphere with its multitudinous technicalities—to engage her attention with profit for some time, but so decidedly inappreciative of the psychology of education are her instructors that after a month's probation a compulsory plunge into abstruse subjects is demanded.

What mind—and surely no one will say that a nurse's mentality is of the same fibre as that of the average medical student—can be affected otherwise than by a sad confusion that has the dire effects of destroying, immediately or even after there is more mental equipoise, the small growth of ideas which a desultory education has bestowed, and putting in their place a conglomerate mass of antiseptics, hygiene, anatomy, physiology, therapeutics and pathology? Graft, we say, only the bewildering technicalities of these many studies on a substratum of an imperfect acquaintance with the tortuosities of English grammar and English composition, and what is there but a deplorable wandering in a wilderness with sheer waste of time as the undesirable guiding star? And later on when the nurse's mind finds itself, so to speak, and what her mentors construe into "a splendid working knowledge" of all the studies, which really pertain to a medical student's curriculum, are hers by right of acquirement and a mistaken idea of mental digestion—have we physiological, pathological laboratories and a special dissecting room for nurses?—the picture evolved, with very few exceptions, is that of an egoistic young woman who deludes herself into thinking she must be quite superior because of a veneer of knowledge that unmistakably places her, in her judgment, beyond the menial duties pertaining to the little indecencies of the sickroom—the care of the bedpan, the insertion of the male catheter, and finally the washing of that part of the soiled linen which should be antiseptically clean, when, as often occurs, there are no servants in the household.

Having tried the scientific training of nurses with results that have invited mild and harsh criticisms, according to the temper of the critic, would it be inopportune, we ask, to suggest that just as the modern currents of thought are affecting to-day the attitude of the doctor towards his patient, a similar appreciation of the tendencies should be exacted from his medical complement—the nurse? Less knowledge of anatomy, of physiology, of pathology, would of course mean less of the sort of education which may have its value in special halls of learning, but which is only an unnecessary encumbrance on the nurse in the sickroom; for if it is called into play there, it is but a source of unpopularity to her, inasmuch as no patient's nerves have ever been soothed by scientific small talk, and

very few doctors consider such conversation other than a foolish vapping of knowledge, the serious interpretation of which rightly belongs to them. Instead of striving to be an educated entity in the sickroom, a nurse should cultivate the graces of culture; for its advantages over mere education are many, in that real culture does not feel itself abased or demeaned in face of what is often demanded, and at present considered menial by its lowly sister, education. But the culture which we deem a necessary factor in a nurse's successful career, should not be dependent on those accidental surroundings which make for this quality in a nurse who has sufficient acumen, but be part of her curriculum; a necessary part, indeed, for it would include all sorts and conditions of things somewhat neglected now—the correct modulation of the voice, an appreciation of good literature and how to read in the sickroom, and a complete knowledge of the art of letterwriting. Again, the culinary art, so sadly neglected to-day in what should constitute a nurse's education, might come in for its proper share of attention; for wiser men than we have often been irritated by a nurse's dense ignorance of the subject. Of course, these are all material things that surely can not hold their own against the superior claims of anatomy and physiology, but in the present arrangement of our mundane affairs, who can deny their worth and value?

INVALID COOKERY.

A subject which should be of paramount interest to doctors is the matter of sick-room cookery. With a negligence that must be due to indifference, we have relegated all culinary affairs, as they pertain to the sick, to the incompetents who happen to be within easy reach when the subject of what should be eaten by the patient is agitated; and with few instructions, principally about what ought to be avoided, the matter is closed so far as the medical man is concerned. What the patient suffers by reason of ill-prepared mixtures or because of an idiosyncrasy, is overshadowed by more important matters—the signs and symptoms of disease; the palatability of medicaments, the multiplicity of things which go to make up the sick-room atmosphere—and only a decided jolt to our composure, following a bellicose attitude on the part of the patient, arouses us at times to the need of some sort of improvement in the culinary phase of the case. But how to get out of the dilemma when no *cordon bleu* comes to our rescue in the homes of the well-to-do, or when economic conditions among the poor preclude even a poor counterfeit of what our limited intelligence conceives as a clever substitute, has been

the source of considerable discomfort to the medical practitioner of somewhat heightened sensibilities. In this matter, as in many others which our sense of patriotism will not allow us to admit, Germany sets an excellent example; for in Mrs. Alfred Sidgwick's recent work on "Home Life in Germany," we read that "even the young doctors of Berlin learn cooking at the *Lette-Haus*. Special classes for invalid cookery are held on their behalf, and are said to be popular and extremely useful. Certainly doctors whose work is amongst the poor or in country places must often wish they understood something about the preparation of food." And not only in this book, but in foreign medical journals and literary magazines has there been more than passing mention of an undertaking that again shows unmistakably how decidedly advanced German thought is when the welfare of the German people is at stake.

The practicability of instructing doctors in cooking having been successfully tested in an older country than ours, the thought which occurs to us is, that imitation would be effective in bringing about a betterment of some of the undesirable inevitables, which a rather primitive regard for the actual preparation of our sick-room dietary has now made possible. By placing the responsibility of this sort of cookery in the hands of competents, such as doctors would undoubtedly be after attending lessons, the conflicting opinions, which now occur directly after the doctor's visit, as to whether or not his rather off-hand remarks in regard to what the patient ought to eat—he overlooks completely the manner of preparation—should be taken seriously, would no longer obtain. Again what patient has not had his equilibrium upset for hours by distasteful dishes, thrust upon him by some member of the family who was ignorant of the extreme sensibility of national idiosyncracies, when irritated by crudities emanating from the usual German, Irish or Swedish cook? For it should not be whispered, but spoken aloud, that the matter of nationalism, as it pertains to sick-room dietary, should not be the neglected quantity that it is to-day, but be encouraged by serious endeavors on the part of all broadminded physicians to the exalted place to which it rightly belongs. How to make it an important factor has long been a problem to the few who have occasionally given it a thought. But now that the feasibility of instructing doctors in the art of sick-room cookery has been firmly established in so progressive a country as Germany, the lesson which our perspicacity and acumen should acquire, should be not only the lesson which would make for a decided improvement in the preparation of food, but the greater one, that the nationalism of the patient ought not to be overlooked when dietetics of the sick-room are discussed.

OPINION AND CRITICISM.

LOMBROSO AS SEEN BY A COUNTRYMAN.

In the *Century Magazine* for October there was published a pen portrait of the well-known Italian criminologist, Lombroso, which has all the *verve* one generally associates with the emotionalism peculiar to the writers of Italian birth, for the author, Guglielmo Ferrero, writes a panegyric whose headlong sweep dashes commonsense against the wall until there is nothing left of the quality which the sane long for most, in estimating the rank of a scientist. Not content to pronounce his hero a psychologist, a physiologist, a sociologist, a criminologist, Ferrero calls him prophet and pessimist. In most countries, we take it, pessimism does not take front rank, but here we learn that in its association with Lombroso's superlative qualities, it has distinctions denied its lesser brother, optimism; and makes of its possessor a genius of the highest mark. Just what Lombroso's super-amount of pessimism has done for him or for his reputation as a criminologist, future generations will have to decide; but to-day we have the spectacle of misguided enthusiasm, amounting almost to frenzy, dragging the most honored names in literature, art and science through the dust, in a vain attempt to show that so great a man as Galileo "was a slanderer and a bad, hard-hearted man—an unscrupulous thief of discoveries made by his pupils, and that Dante was a criminal." Ferrero rushes all sorts of names across his pages to substantiate his wayward and eccentric contentions—Spinoza, Heine, Marx, Lassalle, Nordau—for ethnic and religious reasons, we imagine; but to a nation of thick-headed blunderheads, such as most Americans are supposed to be by reason of their refusal to fall prostrate before visionary theories, it will be difficult to grasp even a distant connection between the modern master of lyricism, Heine, or the prototype of modern Social-Democracy, Lassalle, and the originator of the theory of degeneracy. Again to ask the ordinary man to abide by the opinion that Lombroso's philosophy of life is one of ethics, is a derogatory estimate of the reader's mental horizon.

In contradistinction to this unwise lauding of one whose star is already slightly in the descendent, it would be well for those who are interested in the subject of degeneration, to read the recently published book "*Asymmetry of the Face*,"* by Dr. Richard Liebreich; for it is so clearly and calmly written that conviction of the worth of the theories advanced, must enter the reader's mind directly a careful perusal is ef-

**L'Asymétrie de la Figure*. Paris: Masson & Cie. 1908.

fect. The pronouncement that the new work carries is that asymmetry of the face is not a stigma indicating degeneration, but a manifestation so general that it does not require deep observation to see it in all faces. Hence, why dwell on a matter that is prevalent enough to prevent its being classed with physical abnormalities? To prove his contention, Dr. Liebreich has examined many thousand skulls, belonging to all times and all races; and his conclusions are that asymmetry of the face is in no way a mark of degeneracy, but a decidedly normal indication to be observed even in the period of the beginning of the human race; among civilized and uncivilized peoples; and furthermore, in the same proportion in all races. In explanation of these statements, Liebreich asserts that asymmetry is the result of pressure exercised by the maternal pelvis on the child's face during the last period of pregnancy. In the usual position of the child, the left side of the face would show the effects, while in the position that is directly opposite, and which rarely occurs, the right would bear the mark. Where the position of the head is upwards, and no pressure is possible, the author thinks that heredity is responsible, though here it should not be forgotten, the asymmetry is less pronounced.

LUKE, THE PHYSICIAN.

The Higher Criticism of the New Testament, which has done so much in the past few years to upset our most cherished ideas by surrounding us with hissing incredulity, has received in the recently published "Apostelgeschichte" (The Book of Acts)* a sad blow, inasmuch as the theologian, whom the enthusiastic advocates of iconoclastic onslaughts regarded as their champion, has declared for conservatism and reinstated the physician, Luke, as author both of the Acts and the Third Gospel. That Professor Harnack's reputation as a searching and analytic biblical critic can stand the test of any of the fulminations that might emanate from his bitterest opponents, because of his decisive opinion, should be a source of some pleasure to all physicians, for with the medical welkin ringing with thunderous noises about the necessity of introducing the study of psychotherapeutics in our medical schools, the triumph of the rehabilitation of St. Luke can not be regarded but as a matter of great moment. For Harnack's condition of mind, influenced by the teachings of psychotherapeutics, puts quite a new interpretation on the miracles recorded; and what with the medical phraseology employed and the many indications of medical interest to be found in the Acts, we

*Die Apostelgeschichte. By Adolf Harnack. Leipzig: J. C. Hinrichs

have not only Luke, the "Beloved Physician," restored to the plane on which he securely rested before the foaming phrase of the votaries of dilettant biblical study unseated him, but an ancient expression of the latest phase in the neurological department of medical science—instructor in psychotherapeutics.

The awakening of the medical profession to the necessity of stamping on the subject of psychotherapeutics the seal of legitimacy, augurs well for its future; and though our pachydermatous conservatism has caused in this instance, as in many others too numerous to mention, the possibility of its perverted dissemination at the hands of innumerable Christian Scientists, Mind Healers and Osteopaths, there should be considerable rejoicing among us that recognition of the right sort is at last being meted out to it. Tufts College Medical School is already in the van with a course to be introduced this year, and no doubt other medical schools will ere long make of the pariah a something that, by its systemization and reasoned application in widening circles, will not fail of appeal to the ever-growing class of neurotics who now are compelled to resort to the practitioners of the pseudo sciences.

LITERARY NOTES.

A book that should prove interesting alike to the general practitioner and the specialist is Dr. Paul Voivenel's "Literature and Insanity" (*Littérature et folie, étude anatomo-pathologique du génie littéraire*. Paris: Felix Alcan, 1908). The author essays to establish to what degree a literary success is due to good physical health, heredity, degeneration, or to pronounced insanity. While there are many who will not agree that mental instability is sometimes indispensable to the production of a great literary work, there is enough of interest in this moot question to engage the attention of the serious reader. The anatomical relation between the speech center and the sexual sense is shown; also their physiological relation and the influence of one on the other. As a result of the hypertrophied brain in the literary man, there is mental instability, and this M. Voivenel dwells upon at length, supporting his contentions with many examples drawn from literary sources throughout the world. Here are some of his conclusions: The language zones occupy in the brain considerable space. As a necessity for the art of writing there must be intellectual centers situated in the prefrontal regions and centers of special memory for words. If both are well developed, we have writers of the first order, who are at the same time savants and poets; if, on the other hand, the language zone is the only

one developed, we have great writers, affluent of phrase but devoid of ideas, as instanced in Victor Hugo. A decided development in the language zones coincides with an aphasia and an anemia of other cerebral regions; in other words, there is mental instability. Again, physiology confirms this idea of instability, because, as is known, physiological teachings demonstrate that in the normal state there is a functional instability in each of the four centers for special memory; hence, a slight disturbance in their relations to each other modifies the mind. And here M. Voivenel draws quite remarkable conclusions based on observations of the genius of the principal European writers: Russian, German, English and French. Russian thought is poor and slightly hysterical; it oscillates between depression and excitation. It is unstable, and as examples he cites, Tolstoi, Gogol, Gorky, Garchine, Dostoyevsky; the exceptions being Tourgueniew, Roudine, Novodvorow. If the Russian is a mystic, the German is the dreamer *par excellence*. His poetry and science, his poetry and metaphysics, illustrate a combination of contemplative mind and brutal force. Such are the associations we find in Goethe, Heinrich Heine, Luther and Nietzsche.

In Mr. Havelock Ellis's "The Soul of Spain," we have a new interpretation of a much misunderstood country. That preconceptions in regard to a people, whose ethnologic and anthropologic characteristics differ from ours, are a mistake, has been shown before in authoritative books descriptive of certain foreign countries which do not happen to lie in the beaten path of travel. But of all countries that have suffered most on account of a limited knowledge founded on hearsay or superficially-conceived magazine articles, Spain easily takes first rank. That Mr. Ellis would approach a subject of such psychological importance as the correct reading of Spanish character in his own individualistic way, his former books, so expressive of mental vigor in getting at truths, are a preparation that mean much to the intelligent reader. But even without knowledge of them, and though the lengths to which he carries psychology may not be to our way of thinking, we can not but applaud him for sweeping away the foolish ideas of Spanish character which have come to us from Merimée's erotic novel and Bizet's colorful opera. Here we have for the first time the mind of Spain discussed in all seriousness, so that the reader soon grasps the moment of its purport; moreover, though temperament and customs have affected it in making it racy of the soil, its intellectuality does not suffer. To those who are interested in anthropology and psychology, as modern agents in arriving at a just estimate of nationality and character, no better illustration need be cited than Mr. Ellis's new work.

The *Normandie médicale* has recently published some interesting details about St. Agatha, whose wooden statue, dating from the XVIth century, has been offered to the museum of the medical school at Rouen. The statue pictures St. Agatha carrying a plate on which rests her breast, prayers to which are supposed to benefit all those afflicted with disease of the mammary glands. St. Agatha flourished at Catane in the third century. Her beauty having been remarked by the Roman governor, Quintien, persecutions followed as a result of her obstinacy to accede to his wishes; and as was usual in those delightful times, the only remedy then highly thought of to correct stubbornness was called into play—the red-hot iron. With this her body was seared, and the punishment not being considered complete, “she was further tortured by having her breasts beaten after they were burned.” Agatha was interred at Catane, and soon after miracles took place around her sarcophagus. What these miracles were is easy enough to understand, and even to-day patients suffering from diseases of the breasts believe that supplications addressed to one who had undergone so much in the good cause of virtue, must surely exercise a beneficent influence on the afflicted. Not only was this saint petitioned to help in the diseases mentioned, but she has the further distinction of being the patroness of nurses. Towards the beginning of 1040 the reliquary of St. Agatha was seized by Byzantine invaders and carried off to Constantinople. The reason for this procedure was that the godless regarded the treasure as a preventive against thunder and lightning, storms and fires. In 1226, so the legend runs, Agatha appeared before one of the emperor’s officers and ordered him to return her body to Catane. This was done, but on the way home it happened that at Tarente, two officers opened the reliquary and took the relics, one by one, out of the coffin; then after satisfying their curiosity they returned all but the breast. After their departure, a woman with a child at her breast stopped near where the forgotten relic lay, and fell asleep. The child, with rare prescience, crawled along the ground only to get its reward, for upon encountering the saintly breast, it seized the nipple with rare gusto and drew forth milk of incomparable sweetness. The bishop, hearing of the miracle, came to the scene, with great processional pomp, and it was all he could do to separate the young glutton from its unusual repast.

ORIGINAL ARTICLES.

THE CAUSE OF FAILURE IN THE TREATMENT OF TUBERCULOSIS.

By F. M. POTTENGER, A. M., M. D., of Monrovia, California.

Following some serious operation, it is frequently remarked in a spirit of jest that the operation was successful, but the patient died. This remark bears with it more than what is grasped at first hearing. It bears with it an apology; the surgeon has done his work well but in spite of that the life has been sacrificed. If we inquire the reason for this it is often found to be that the operation which would have saved the life had it been done early, was delayed until it was too late. Either the diagnosis was not made early or there was a failure on the part of some one to have the proper remedial measures applied after the diagnosis was made, at the time when success was attainable.

The physician who treats tuberculosis often finds himself in the same position as the surgeon mentioned above. He has done his work well. He has applied the measures which are recognized as sufficient to bring about a cure of the disease, in an intelligent and painstaking way; yet, the patient has not been cured. It is my purpose in this paper to discuss the reasons for this failure. It is not my purpose to blame anyone for those who have already died; but, by inquiring why they died, lives may be saved in the future.

We may be better able to understand the causes which produce our failures if we first discuss the causes which contribute to a cure in tuberculosis.

I would like to preface my remarks on this subject with the statement that there is a time in the history of nearly every case of tuberculosis when it is curable. This may seem to some almost revolutionary and too absurd for credence, nevertheless, facts will warrant the statement. If true, why do we allow so many people to die of this disease? The answer is, because of a total failure or a delay in applying the proper remedial measures.

It is the same delay that causes death in diphtheria, appendicitis, and other serious though curable diseases. Delay is responsible for much of the suffering and much of the cost attendant upon this disease, also for most of the deaths caused by it. "Procrastination is the thief of time;" it is the murderer of the tuberculous patient.

Primarily, the question of cure in tuberculosis is a question of numbers and virulency of the infecting micro-organisms. We have every reason for believing that great numbers of tubercle bacilli as well as other micro-organisms are frequently taken into the human body without producing disease. We have also equal reason for believing that large quantities of bacilli will produce tuberculosis in any human being.

These conclusions are sustained by the mass of evidence produced in the laboratories during the past few years. It has been shown that some of the protective substances (opsonins) are partially or wholly unable to act upon very virulent micro-organisms; hence a high degree of virulency makes it easy for them to cause an infection. It has also been shown that, when protective substances (opsonins) are called upon in defense of the organism, they are used up, and caused to disappear from the body fluids; therefore it stands to reason that great numbers of bacilli might for the time use up the protective substances and still exist in such numbers as to cause an infection.

We must understand an infection then as being a condition on the part of the body wherein the invading micro-organisms have at least for the time being kept the protective substances in abeyance.

This deficiency of protective substances may only be temporary and with their restoration may come a destruction of the focus of infection and a cure of the disease. Doubtless this happens very often without any visible signs of the infection remaining; however, frequently the infection becomes more pronounced and the focus becomes larger, so as to demand help upon the part of the patient in order to bring about a healing.

At this juncture let us consider another important factor which goes hand in hand with the numbers and virulence of the bacilli, I refer to the size of the focus.

The primary infection in tuberculosis never kills the patient. It is only after the bacilli have invaded other tissues and after other pathological changes have occurred that life is endangered. It is the tendency of the disease to spread that makes it so serious.

Tuberculosis, when it has once infected the body spreads in several ways; first, through the adjacent lymph spaces; second, through the blood vessels which pass through the focus; and third, by way of the eliminative channels as the bronchi and ureters.

The greater the focus the greater is the opportunity of the disease spreading, which can be readily seen when we compare an area the size of a marble with an area as large as one's fist or one occupying an entire lobe of a lung. Conceiving of the bacilli as making more or less constant attempts to escape from the focus of infection as just mentioned it can readily be seen that there must be infinitely more bacilli escaping from a very large focus than from a small one; and as the bacilli are destroyed and prevented from causing infection by the protective bodies found in the body fluids, and as they in turn use up the

protective bodies which are found in the body fluids, it stands as a self evident fact that the larger the focus the greater the demand on the antibodies and the greater the danger of infection becoming scattered.

Then, if we consider other important facts, viz.: that the larger the focus the greater the amount of toxins thrown out into the vessels and the greater the focus the greater the mechanical disturbances, especially on the part of the respiratory and circulatory systems, then we can see further reason why the early lesion is comparatively easy to cure, and why the advanced lesion is cured with great difficulty.

In 1856, Herman Brehmer, to whose patience and perseverance modern phthisio-therapy owes much of its force, wrote his thesis for final degree upon: "*Tuberculosis primis in stadiis semper curabilis.*" This new doctrine of early tuberculosis being always curable was so at variance with the teachings of the time that it was not considered seriously. It has taken fifty years to prove that Brehmer was right. To-day, however, the intelligent treatment of tuberculosis, carried out under the most favorable conditions when the disease is in its incipency will restore most patients to health.

Why, then, is this useless sacrifice of life to tuberculosis allowed to go on? Why are one hundred and fifty thousand people in the United States allowed to die annually of a disease that will yield to so large a degree to modern methods of treatment?

A careful analysis of several hundred clinical histories of tuberculous patients shows that the cause of the mortality in tuberculosis from the clinical standpoint is due to:

First, an apparent failure upon the part of both medical men and laymen to appreciate the fact that tuberculosis is curable, and an especial failure to appreciate the comparative ease with which the early cases are cured.

Second, a failure upon the part of both medical men and laymen to appreciate and recognize the signs and symptoms which accompany early tuberculosis.

Third, a failure upon the part of both medical men and laymen to appreciate the necessity of prompt energetic treatment as soon as a diagnosis can be made.

It would seem that with the great mass of clinical evidence at hand and especially the reports of sanatoria which show many thousand people who have suffered from tuberculosis to have regained their health, and with the post mortem evidence which shows healed lesions in so large a proportion of subjects, that there should be no excuse for the members of the medical profession doubting its curability. Yet it is not uncommon to hear medical men say that they do not remember a single case of tuberculosis in their practice that regained health. This statement might be made with equal truth of many other diseases. Many men have never corrected errors of refraction, never treated skin diseases and never opened an abdomen, yet their experience does not count at all against

the fact that these things are successfully done every day. I wish to emphasize the fact, that there is a time in the history of nearly every case of tuberculosis when it will yield to intelligent treatment; that it does not, is due to the fact that the proper remedies are not applied in the proper manner at the proper time.

The proper time for treating tuberculosis is as soon as the diagnosis *can* be made. I do not mean as soon as it *is* made, for the diagnosis of tuberculosis is not made in the great majority of cases until the disease is well advanced, until the most favorable time for its treatment has passed.

The early signs and symptoms of tuberculosis are not as distinctive as are the signs and symptoms accompanying many of the other diseases; yet, as a rule, they are sufficiently plain to him who is conversant with them. The symptoms produced by a small tuberculous focus are as a rule very slight, and are either unheeded by the patient or unrecognized by the physician. Too often the local signs are well marked and the constitutional symptoms unmistakable before the diagnosis is made. This nearly always means an advanced lesion, one which is more difficult and much less certain of cure.

While early diagnosis is profiting at the hands of both physician and layman by the general distribution of knowledge attendant upon the present world-wide movement for the prevention of tuberculosis, yet those of us who have most to do with the treating of this disease are amazed at the manner in which the disease is overlooked in its early stage. Neither physician nor layman seems to recognize the early signs; both seem to confuse them with many indefinite and obscure conditions. It seems to me that much of the fault on the part of the physician lies in the prevalent, lazy habit of treating symptoms and failing to make a diagnosis. The tuberculous patient suffers from malaise; he is given a tonic with the purpose of building him up. His tuberculosis is not suspected and left untreated. He suffers from frequent and protracted colds; he is given a spray or some favorite cold remedy; his tuberculosis is not recognized. He shows a variable appetite and loses weight; he is given a bitter tonic with some favorite digestant; no diagnosis is made. He has a tickling sensation in the larynx accompanied by cough; this is treated with sprays, the nasal septum is straightened, enlarged adenoids and tonsils are removed, the poor old uvula is clipped short up to the soft palate and opiates are administered; the cough remains and returns as soon as the opiates are left off. No diagnosis is made. The lungs have not been suspected. The patient expectorates blood; the throat is examined with more or less care for a mythological bleeding point, and to the great delight of the patient the physician thinks he sees the point from which the blood is coming. "Throat hemorrhage" is the diagnosis. The lungs have not been examined. And so on I might continue, but this is enough to show that our profession is not giving the best service that it can to those suffering from tuberculosis. I would

not detract one iota from the honor that is due our profession for its noble self sacrifice and its unswerving devotion to duty, but I would on the other hand, still further enrich and ennoble it by increasing its opportunity to relieve suffering, thus augmenting its power for doing good. In preventing the spread of tuberculosis and in offering an opportunity of cure to those who are afflicted the family physician must assume the responsibility and to him must be the honor. Whether the next generation shall witness the passing of tuberculosis as a common disease or not will depend on whether or not the family physician appreciates his opportunity and assumes the responsibility.

In this connection permit me to quote the introductory paragraph from the chapter on Diagnosis of Early Pulmonary Tuberculosis from my recently published book: "While it is desirable to expend greater energies and make greater effort to discover a more perfect method of treatment for tuberculosis, yet we must not lose sight of the fact that present methods when applied early will offer health to from 65 to 90 per cent. of patients. If medical men in general would expend but a fraction of the energy in learning to diagnose tuberculosis early, that a few scientists are expending in endeavoring to discover a 'cure,' we would be able to say that the cure for tuberculosis is already at hand."

Tuberculosis can and should be diagnosed before bacilli are found in the sputum. It is not a disease of sudden explosive onset following at once upon the taking of bacilli into the body; but a chronic one alternating between periods of activity and quiescence. In most cases there are prolonged periods extending over months, sometimes extending over many months and sometimes over many years, during which time the patient occasionally shows signs of tuberculosis, before the disease manifests itself with marked symptoms. Between the times when these slight symptoms appear, the disease is quiescent and the patient may suffer no inconvenience; and, were it not for the occasional periods of activity the patient would not know that anything ailed him. This condition of latency must be understood if we are to make progress in early diagnosis.

While I have no new symptoms to offer and no new method of examination which will afford a short cut to the diagnosis of early tuberculosis, yet at the risk of repeating trite facts I will discuss briefly what I believe to be the most important features to be observed in making a diagnosis of early tuberculosis.

Inasmuch as the patients who are suffering from early tuberculosis are seen first by their family physician, the burden of making the diagnosis is upon him and the question is how can he do it? In the first place he must take time to examine his patient and make a diagnosis and not treat symptoms alone. A man can not take a careful history and examine a patient for early tuberculosis in a few minutes. Specialists will often spend from one-half hour to one hour examining each patient and the general practitioner must not expect to render a verdict any

sooner. He should not trust too much to physical findings in the chest unless he be expert with the stethoscope; and he should learn not to be too free to give a negative opinion. He should learn to suspect tuberculosis, even if he is unable to find it by ordinary methods.

A carefully taken clinical history will usually give information of such value as to render the presence or absence of tuberculosis probable, and upon the knowledge so obtained the physician can base his further action. If the history furnishes positive information, then other methods of clinching the diagnosis should be resorted to at once.

A history of continued malaise with loss of strength and ability to perform accustomed tasks, perhaps with slight symptoms of nervousness, and some digestive derangement is very suspicious, and the more so if the patient has had several such attacks. Frequent or prolonged colds or attacks of bronchial catarrh; more or less continued hoarseness without apparent cause; a slight hacking cough; frequent attacks of so-called intercostal neuralgia; a slight rise of temperature (when other causes are ruled out); a spitting of blood either at the time or at some previous time; pleurisy either in the past or at present; are all suggestive of tuberculosis. If any one of these is present, or better if a combination of several of them is found, it makes a very suspicious history and calls for the application of other methods to complete the diagnosis. Such other methods are, first, a thorough expert examination of the chest; second, if necessary, repeated microscopical examinations of any mucus that may be raised no matter how scant it may be; third, the administration of the tuberculin test.

It is not probable that physicians in general will trust their ability to examine chests sufficiently to base a diagnosis upon it in the early stage before there is moderate infiltration as shown on percussion and before rales are elicited upon auscultation; but, they can take a careful history and gain a suspicion of the presence of the disease and then use the tuberculin test or call a consultant who is able to clear up the diagnosis.

In regard to the tuberculin test, I wish to say only a few words in passing. It is a perfectly safe procedure in the hands of careful men and need not be feared. While it is not regarded as infallible, it is as accurate as any other method of making a clinical diagnosis. The information obtained by its employment is invaluable and the supposed risk to the patient is in no wise commensurate with the real risk attendant upon uncertainty and delay.

The physician must learn, however, the danger of giving a negative opinion which assures the patient that there is nothing the matter and allows him to go ahead careless of his health. It is better in all cases where there is doubt, to have the patient exercise the same care as he would if the diagnosis were positive.

For those who do not feel sufficient confidence in their ability to diagnose early tuberculosis by percussion and auscultation I would like to mention the importance of the lagging of one apex behind the other when

the lesion is unilateral. Men, with a little training can soon learn to appreciate the difference in expansion which is perceived by the hands placed symmetrically over the two apices. I prefer to stand behind the patient and with my thumbs over the apex posteriorly, allow the palms of the hands with the fingers to extend down over the clavicle and upper ribs. As the patient breathes, if there is any difference in expansion of the two sides it can be readily detected. The affected side will either expand slower than the sound side; or, less fully, or both. This is to a certain extent inapplicable when both apices are infected, and under such conditions requires careful interpretation. Lagging does not necessarily mean the presence of an active tuberculosis. It can be interpreted properly only when taken in conjunction with other suspicious symptoms.

We must now discuss the third reason for failure from a clinical standpoint, viz.: the failure to apply remedial measures at once upon discovering the disease.

Tuberculosis must always be considered a serious disease. Delay in its treatment is always attendant with risk. There is never a time after the bacilli have formed the first focus when it is too early to treat the infection. But when the patient is seen by the physician it is a long time after this. It is only when the disease has extended sufficiently to cause constitutional symptoms, that medical opinion is sought, and therefore there should be no delay in instituting remedial measures.

From the nature of the disease, the patient does not realize its seriousness and consequently unless the physician is firm and positive, nothing in the way of treatment will be attempted, and the patient will be allowed to go on in his usual manner, the disease will continue to spread and soon the patient will be beyond hope of cure.

Statistics show that between 65 and 90 per cent. of first stage cases and between 30 and 65 per cent. second stage cases can get well, while a clinical healing can occur in only 5 or 10 per cent. of those who are in the third stage. In the face of facts, delay is not only permitted but even counseled by members of the medical profession who should know the seriousness of this disease. Patients are often told when the disease is first discovered that they are not sick enough to undertake treatment. This is a great mistake and usually results in the death of the patient.

If there is any disease that needs immediate intelligent treatment as soon as a diagnosis can be made that disease is tuberculosis, not because the patient without treatment will die the next day or within the next few days, as must be the case in diphtheria or appendicitis, but because the final outcome based on delay will be fatal in a much larger proportion of cases than in either of these other serious diseases. On the other hand, intelligent treatment at this favorable time will restore nearly all to health. Let both layman and physician be united in the opinion which is borne out by experience, that there is no time when it is too early to

treat tuberculosis, and then let it be treated according to modern approved methods and the failures which are now recorded will rapidly disappear.

In the few minutes allotted to me I have endeavored to point out from bacteriological and pathological standpoints why early tuberculosis heals more readily than later tuberculosis, and then I have endeavored to show that the burden of the failure to have the disease treated at this favorable time must fall conjointly upon the layman and the physician. What we need is to have a better appreciation of the early signs of tuberculosis, a better understanding of the principles underlying its cure and a determination on the part of both layman and physician to apply appropriate remedial measures as soon as the disease is discovered. Early recognition with immediate intelligent treatment are the essentials to success. They have taken away the fear in appendicitis and diphtheria; they will also do the same in tuberculosis.

NUTRITIVE DISTURBANCES FROM THE FAT IN MILK.

By JOHN ZAHORSKY, M. D., of St. Louis.

If you ask the American pediatricist what ingredient of cow's milk offers the greatest difficulties to the digestive functions of the infant, the reply will be positive—the proteids. This view has been held for several decades. It was promulgated by some of the old masters and in recent times has been expounded by Filatow, Biedert and Monti of the European schools, and by Rotch, Holt, Jacobi and Chapin of the American schools.

Now, however, the theories of the Breslauer school are rapidly gaining ground abroad, and as these are so contradictory to our previous conceptions, a critical analysis of their reliability as practical guides is in order. It is true that Czerny, Keller, Heubner and Finkelstein have done some wonderful work in the metabolism of the infant and their theories deserve careful consideration.

The old theory of difficult proteid digestion was based, principally, on the fact that casein coagulates in hard, large masses in the test tube; that large masses were frequently vomited by infants; and that "curds" were found in the stools, which were regarded as remnants of casein coagula.

We now have quite a large number of analyses of these curds, which can leave but little doubt that these lumps in the stools are usually not casein, but salts of the fatty acids. The precipitate produced by acetic acid in solutions of the stool must be referred to the nucleoproteids from the bile and the intestinal secretions. Only a small quantity of albumin can be found in the stools of infants, even those suffering from a nutritive disturbance, and most of this is probably derived from the bacteria. It seems to me, however, that the number of examinations are still too few to allow of a positive assertion that casein never occurs in the stool.

While cow's milk coagulates in large masses in a test tube, the coagula are much smaller when the tube is shaken and the milk added gradually. Nevertheless, the clinician who is perfectly familiar with the coagula regurgitated and vomited by infants, after the feeding of cow's milk or human milk, has little patience with these test-tube experiments. It is the universal experience that the coagula from cow's milk are larger and tougher than those from human milk. The evidence offered by emptying the contents of the stomach by means of a rubber tube is inconclusive, since the small opening of the tube acts as a sieve, only the smaller particles being admitted through the tube. Occasionally the clinician observes very large, hard masses of casein vomited, especially after stasis of the milk in the stomach. The European enthusiasts have

attempted to overthrow these observations, but the facts remain unaltered.

It is quite a different problem when the digestibility of these paracasein coagula is examined. The coagula of paracasein, as a rule, are readily dissolved by the digestive fluids and are broken up by the peristalsis of the stomach and intestines.

To assert that the stools of infants contain mostly fat, does not solve the problem of nutritive disturbance from cow's milk. The stool of the healthy breast-fed infant is also composed principally of fat. It is to this excess of fat in the stool that the soft character of the latter has been ascribed. According to the newer views, milk indigestion from cow's milk usually produces constipation and the stools are composed of hard lumps. Only exceptionally does an increase of fat cure the constipation. When no bacterial decomposition is present, when the milk given contains a minimum number of bacteria, a high percentage of fat often increases the constipation. Even Holt, in his series of cases (*Arch. Pediatrics*, 1905), reports one case in which a reduction in the percentage of fat in the food relieved an aggravated case of constipation.

When, however, bacterial activity becomes more active, the stools become thin, frothy, and more or less diarrhea results. This is the state of decomposition. It is probably in these cases that the saccharo-butyric type of fermentation may become implanted. Then the stools give a musty, or rancid feter. According to Herter, ammonium butyrate is formed and this substance is very irritating to the buttocks and the rectum, giving rise to a dermatitis around the anus and the infant suffers from colicky pains and tenesmus.

The Breslauer school insists that meteorism is most marked in the milk indigestion due to fat indigestion. This is in line with the observations of Herter, who also writes of the gas produced in the saccharo-butyric fermentine caused usually by the bacillus aerogenes capsulatus.

But these clinical groups are probably infections and differ from the *Milchnährschaden* of the Breslauer school. It occurs even before any bacterial decomposition of the intestinal contents. In fact, what we term milk indigestion is always fat indigestion. To explain the harmfulness of milk indigestion they have worked out the interesting theory of enterogenic acidosis.

It was Keller who discovered ammonia in excess in the urine of infants suffering from digestive disturbances. Its presence in large quantities suggested that it was formed to neutralize acids. These acids were not found until Freund demonstrated that the fatty acids in the intestinal canal separate the calcium from its compounds with phosphoric acid, which is then absorbed. The phosphoric acid combines with alkalis in the blood and is excreted as a phosphate in the urine. When alkalis become deficient, the liver is forced to manufacture ammonia in order to neutralize the free acids. A greater destruction of tissue proteid occurs and the ammonia coefficient in the urine is very much increased.

Every digestive disturbance is necessarily accompanied by a metabolic disturbance and the formation of calcium and magnesium stearate, palmitate and margarate disturbs anabolism and then results the loss in weight, constipation, meteorism, etc.

This enterogenic acidosis must be carefully distinguished from the intermediary acidosis, to which subject Meyer and Langstein last year made an interesting contribution. They found that in a hungry infant the intermediary acidosis rapidly rises. These acid bodies are acetone, acetic acid and oxybutyric acid. This acidosis likewise occurs when an insufficiency of carbohydrates is administered to infants. A rich fat diet also favors an intermediary acidosis and the ammonia coefficient in the urine becomes augmented in a great degree.

While the subject of fat indigestion has been apparently so thoroughly worked out and an interesting hypothesis offered, the subject of proteid indigestion receives little attention by the new schools. In fact, Czerny and Keller declare that unless some new researches reveal additional evidence, the subject of proteid indigestion has no clinical importance.

If, then, milk indigestion means fat indigestion and an enterogenic acidosis lies at the root of the trouble, the administration of alkalies should give relief. Although Czerny and Keller did not have any definite results from their experience, the wide-spread use of alkalies, such as sodium citrate, sodium bicarbonate, lime water, and others, indicates that their administration in milk indigestion is at times very useful. Even peptonized milk, it must be remembered, is made by the addition of a large amount of bicarbonate of soda, and it is possible that the beneficial results of peptonization may, at least partially, be due to the addition of the alkali and not to the partial digestion of the proteids. Thus the hypothesis of fat indigestion and enterogenic acidosis has a very alluring aspect.

The American pediatricists have given scant attention to fat indigestion or nutritive disturbances from fat, since the whole attention has been absorbed in the problems of proteid indigestion. Numerous methods have been devised to overcome the difficulty of proteid indigestion and while all the difficulties of milk indigestion have not been solved, our results compare very favorably with the clinicians who work on different theories. Holt, not long ago, reported a series of cases of nutritive disturbances due to an excess of fat in the diet, but the symptoms which he attributed to this excess of fat were not uniform and little or no conclusion can be drawn from this study. Certainly, he who has followed recent researches in spasmophilia (infantile tetany) will hardly assign the high percentage of fat to a place in the etiology, although it is possible that a disturbance of nutrition in the sense of Czerny and Keller may favor the spasmophilic diathesis.

Rotch has taught us for many years that infants afflicted with marasmus do not improve on a milk mixture containing the ordinary

percentage of fat. This is the only American testimony that can be found to corroborate the European views. For it is rational to infer, from this clinical fact, that in the conditions preceding the atrophy, fat is not digested, and thus may be harmful.

Have the new theories added anything to our practical rules for feeding? Probably, yes. In the nutritive disturbances due to milk indigestion the reduction in the quantity of fat often results in an improvement in the symptoms. To make up the heat units it is necessary to add an additional amount of carbohydrates. The favorable results obtained from buttermilk or condensed milk is usually attributed to altered character of the proteids, but may really be due to the high percentage of sugar and the low percentage of fat. The whey and condensed milk mixture so highly recommended in atrophy by Dr. Saunders, may owe its efficiency to its low fat and high sugar content. The mixture, as usually prepared, contains about $1\frac{1}{2}$ per cent. of proteids, 1 per cent. of fat and 8 per cent. of sugar.

The theory of *Milchnahrscheden* from fat does not, however, explain the beneficial effect of cereal decoctions in the milk mixtures. While starchy gruels have been used for decades as diluents for milk, it was Keller who first studied the subject scientifically and demonstrated that flour decoctions with beet sugar are far superior to solutions of milk sugar in the diet of infants suffering from indigestion.

It should be remembered, however, that an excess of sugar very much favors the development of that syndrome of symptoms which Finkelstein has designated alimentary intoxication. It is, perhaps, never wise to use a milk mixture containing more than 8 per cent. of the mixed carbohydrates.

For several months I have been trying to test the newer theories in practice. I am still unable to attribute all the faults of indigestion to the fat in the milk. Certainly, I am not so enthusiastic over fat-free milk as Walls, of Chicago. Yet I believe we have been laying too much stress on the proteids. Infants can often take a high percentage of proteids if the fat is reduced. On the other hand, young infants who received 2 or 3 per cent. of fat do better when the proteids are very low in percentage. Skimmed milk does not solve all our difficulties, as even the Breslauer school admits.

I will briefly report a few recent cases which illustrate some of the difficulties of milk indigestion.

Baby L., aged 4 months, was rather delicate since birth and had digestive disturbances. He spent the hot summer months near Milwaukee where he received a milk according to the Backhaus formula. During this time he gained very slightly in weight, but his digestive functions seemed very good. When he returned to St. Louis I ordered a milk mixture from the Walker-Gordon Laboratory, having apparently the same composition as the food he had been taking. The infant did not do well, however; he was troubled very much with flatulent colic. The

stools were not bad in color or consistency, but had a rancid odor. Some large curds were passed in each stool, which had the appearance of lumps of butter. The fat, which was 3 per cent., was then reduced to 1 per cent. with little or no improvement in the symptoms. The mixture given was whey and cream. This was discontinued and a simple dilution of certified milk used. Still lumps of butter were passed, and after two weeks no gain in weight had resulted. Then all the cream was taken from the bottle and more sugar added. Still no gain in weight occurred, although the curds in the stool grew less numerous. The odor of the stool was unchanged. Then dextrinized flour gruel was used as a diluent, the fat increased to 2 per cent. The infant commenced to gain in weight and the other symptoms disappeared.

I am unable to reconcile the incidents in the history of this case with the acid intoxication hypothesis. True, there were some fatty lumps in the stool, but fat alone certainly was not the only cause of the indigestion.

In another infant, 6 months old, who refused to gain in weight for 6 weeks, and had repeated attacks of severe colic, skimmed milk produced no improvement, either in the weight or constipation.

In another infant, 10 months old, skimmed milk did not relieve a constipation resulting from a dilution of top milk.

It is a clinical observation generally known, that most infants are constipated on cow's milk when the milk is not decomposed by bacteria. The great objection to certified milk is that it usually induces constipation. The stools are usually hard and light in color. Yet these infants do very well and no symptoms of nutritive disorders are present. It takes more than the presence of calcium soaps in the stools to show that the digestion is out of order.

Rothschild has recently reported cases of diarrhea from excessive fat, which only shows how clinicians still differ as to the origin of certain disorders. The Breslauer school has as yet given scant attention to diarrheal cases from fat indigestion.

No one will doubt the value of the studies of the younger schools of pediatrics. The physiological chemistry of the digestion and metabolism should be thoroughly elucidated. But they have made the mistake of overthrowing, or at least disregarding, the clinical experience of the ages because their test tubes did not show the inferred reactions. It is again the laboratory fighting the clinician. The history of the past shows that the clinical phenomena recorded must be explained by the laboratory, and not set aside. Experience has abundantly shown that the subject of the digestion of cow's milk, or rather the indigestion produced by it, is much more complex than is indicated by the acidosis hypothesis.

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ADDISON'S DISEASE.

By L. H. HEMPELMANN, M. D., of St. Louis.

The train of symptoms that we call Addison's Disease was first described by Thos. Addison in 1855. He reported 11 cases, described the symptoms, and pointed out that the disease was due to an impairment of function of the suprarenal capsules. These cases are rather rare and because of the many obscure points connected with them and their resistance to all forms of treatment, have never ceased being objects of interest to clinicians.

Addison's disease is a symptom-complex which ensues after disease of the Suprarenal Capsules or the neighboring Sympathetic ganglia. Embryologically the parenchyma of the adrenals is derived from the sympathetic system being classed as an "accessory organ" together with intercarotid ganglia and organs of Zuckerkandl while the cortical part comes from the mesonephros from which the urogenitalia are derived.

The physiology of these interesting bodies is not fully worked out as yet but one is quite safe in saying that these so-called "ductless glands" are essential to life, that they supply the blood with a substance that raises the blood pressure and that they neutralize certain toxic products the result of muscular activity.

The etiology and the pathology are also not very well understood, one finds a tuberculosis of the suprarenals in 80 per cent. of the cases and next in frequency a simple atrophy of these organs. Occasionally neoplasms, gumma and ecchinococci of the adrenals or disease of semilunar ganglion have given rise to this symptom complex. In certain cases that have presented the whole picture of Addison's disease the suprarenals have been found intact and in other cases, disease and even destruction of the adrenals has occurred without producing symptoms of this disease. Kohn in 1903 described a system of "chromaffine cells" in the suprarenals and in the neighboring sympathetic ganglia which he thinks are responsible for these apparent anomalies. He and his followers (Wiesel and others) claim that Addison's disease is really a disease of these chromaffine cells and that in those cases where the adrenals are diseased and no Addison's has resulted the chromaffine cells of the sympathetic have vicariously assumed the function of those of the suprarenals. In the cases of Addison's with intact adrenals the chromaffine cells of the sympathetic ganglia are found diseased. These views have been opposed by some authors and one must admit that some of the deductions have not as yet been proven.

Neusser's views as to the nature of Addison's disease are summed up as follows:

"The suprarenal capsule is a gland with an internal secretion. It possesses a double function: First, the neutralization of the toxic products of the metabolism of other organs; second, the synthetic production of a substance which is essential to the sympathetic system maintaining its nutrition and a normal tone.

In every case the symptoms of Addison's disease result from impairment or eventually complete suppression of these functions of the suprarenals, brought about by disease of the capsules themselves or of the nerve tracts controlling their function. (According to Neusser the splanchnic.) These nerve tracts extend through the splanchnic and the coeliac ganglion from the spinal cord. This impairment and eventual suppression of the function of the suprarenals account for the nutritive and functional disturbance of the sympathetic system on the one hand, and for the general autointoxication on the other. In addition to these two principal factors extension of the pathologic process in many cases to the abdominal sympathetic is responsible for the occurrence of some of the symptoms of Addison's disease.

Pigmentation of the skin and mucous membranes is not an integral part of Addison's disease and though of decided diagnostic significance is not an essential feature (being the result of lack of tone of the sympathetic)."

Addison's disease is a disease of adult life; being rare under 35 although a few cases in children have been reported. It is much more frequent among the poorer classes than in the well to do. Males are affected almost twice as often as are females.

The cardinal symptoms of the disease are the asthenia, the discoloration of the skin and of the mucous membranes, the low blood pressure and the gastro-intestinal disturbances. There is usually some anaemia although not of a high grade, also mental hebetude toward the end of the disease and vertigo and ringing in the ears especially if we attempt to have the patient sit up. Dr. Addison's description is so classical that we can do no better than to quote him. He says regarding the symptoms: "The leading and characteristic features of the morbid state to which I would direct attention are, anaemia, general languor and debility, remarkable feebleness of the heart's action, irritability of the stomach, and a peculiar change of color in the skin, occurring in connection with a diseased condition of the supra-renal capsules." And again speaking of discoloration: "This discoloration pervades the whole surface of the body, but is commonly most strongly manifested on the face, neck, superior extremities, penis and scrotum, and in the flexures of the axillae and around the navel.

"It may be said to present a dingy or smoky appearance, or various tints or shades of deep amber or chestnut-brown; and in one instance the skin was so universally and so deeply darkened that but for the features the patient might have been mistaken for mulatto.

"In some cases the discoloration occurs in patches, or perhaps rather certain parts are so much darker than others as to impart to the surface a mottled or somewhat checkered appearance. * * * * This singular discoloration usually increases with the advance of the disease; the anaemia, languor, failure of appetite, and feebleness of the heart, become aggravated; a darkish streak usually appears on the commissure of the lips; the body wastes, but without the emaciation and dry harsh condition of the surface so commonly observed in ordinary malignant disease; the pulse becomes smaller and weaker; and without any special complaint of pain or uneasiness the patient sinks and expires."

The cause of the pigmentation of the skin and mucous membranes and its mode of origin have remained unexplained up to the present although the adrenals have been removed experimentally in certain animals and infected with tuberculosis in others and all the other symptoms of the disease reproduced. Similar pigmentation occurs in persons who are exposed to high temperatures such as stokers on ships and in gas works, also in the so-called vagabond's disease, in certain cases of tuberculosis and in pregnancy, in "bronzed diabetes," melanotic sarcoma, Von Recklinghausen's disease, syphilis, and after the prolonged use of arsenic or silver.

The diagnosis in advanced cases is easy but is very difficult in the early stages and it seems to me that until we learn to recognize cases of Addison's disease early our therapeutic efforts will probably remain futile. Greenbaum (*Practitioner*, August, 1907), claims that suprarenal extract given three times a day will produce a distinct rise in blood pressure in three days in Addison's disease while no rise will be recorded in other similar diseases. In our second case the blood pressure rose after the use of suprarenal tablets, but of course the method requires prolonged and careful testing to determine its real value in diagnosis.

Prognosis: Until recently once the diagnosis Addison's was made the only hope for the patient was that the doctor had made a mistake in the diagnosis. In May, 1907, however, Ernst Grawitz presented two recovered cases of Addison's before the Berlin Verein fuer Innere Medecin, so that those of us who are optimists can hold out some hope of recovery to the patient and his family. As a rule the disease runs its course in two to three years although acute cases terminating fatally in from three to five months have been recorded. Remissions occur in some cases during which the pigmentation recedes and the patient's general condition improves but after a time the symptoms recur and cause death in a short time as a rule.

Therapy: The various suprarenal preparations which have naturally been used in this disease have all proven themselves almost useless. A few authors express themselves as having seen temporary improvement after their use but as these remissions occur spontaneously also it is hardly fair to say that they occurred because of the treatment used; perhaps we do not give these preparations early enough or do not use

them properly. It is probable that our tablets and extracts if they are not destroyed in the process of digestion have only a temporary action. Ernst Grawitz gave his cases that recovered hydrochloric acid, washed the stomach with normal saline solution and gave nutrient enemata. He thinks that auto-intoxications play a role in the etiology of this disease and claims that these are lessened by the means he uses. His first case has been under observation since 1901 and the other since 1903; the method certainly is worthy of a trial.

During March and April of this year we had two cases of this interesting disease under observation at the same time and as we were fortunate enough to obtain an autopsy in each case, I think a brief report of them will not prove uninteresting.

Mrs. B. L., age 34 years, was admitted to the hospital on April 12, 1907. Her family history was good; she said that she had had measles when six years of age, typhoid fever when 21, and sciatica when 24; otherwise she had always enjoyed good health. Her menses appeared in her 13th year, had been regular and painless; she had had two children, the younger being eight years of age. Her habits were good. Her husband had deserted her in 1902 and since that time she had often been in want, this had caused her much worry and often made her despondent. Her present trouble began two years before her entrance to the hospital when she noticed that she was unable to work as she had done formerly and that she tired very easily. Her skin had been growing darker for the past year; the weakness had progressively increased so that she had been unable to do work of any sort for the past three months. Since the same time she had had a great deal of backache which had also been growing worse lately. For several weeks she had been confined to her bed because of the weakness and the pains in the lumbar region. She had vomited several times the week previous to her entrance to the hospital, never previous to that time. As a rule her appetite had been good and her bowels constipated.

Physical examination showed a well built, slightly emaciated woman whose skin had a peculiar light brown color something like the coat of tan one acquires on a summer vacation. The skin of the hands and of the face was darker than that of the body but there was no especially dark pigmentation of the areola around the nipple or in the regions exposed to friction from the clothes. A slight branny desquamation was present on the forehead and the cheeks and a few dark brown spots were visible on the mucous membranes of the mouth. Her grip was very weak and became rapidly weaker if one asked her to squeeze the hand repeatedly. There was no vertigo on having her sit up in bed.

Examination of the lungs was negative, of the heart revealed a slight mitral insufficiency; the pulse was 90 and of low tension; unfortunately the blood pressure was not taken. Examination of the abdomen and of the urine was negative as was also examination of the lumbar region where she complained of intense drawing pains. These she said were

almost unbearable and as we were anxious to give her some relief and thus keep her in the hospital for further study, that panacea for all muscular pains, asperin was prescribed for her. The next day she expressed herself as feeling much better and told the house physician at eight p. m. that she was quite comfortable. At 10 p. m. she sat up in bed, screamed and fell back dead.

The autopsy 14 hours later showed old pleural adhesions on either side, normal lungs, and a thickened, shrunken mitral valve. The myocardium was soft, yellowish and easily perforated by the finger. Both adrenals were atrophic, the right one about $\frac{1}{8}$ inch; the left perhaps $\frac{1}{4}$ inch in diameter, globular in shape and dark in color, looking something like a lymphatic gland. Microscopical examination showed an atrophic condition, remnants of normal adrenal tissue being recognizable here and there.

The second case, a steamboatman of 44 years, entered the hospital on March 2, 1907. His family history was good and he claimed to have been always healthy except for several attacks of "malaria." He had never had any venereal trouble and had used alcohol and tobacco moderately. He said that he had felt weak and tired for about two years, that he had lost 15 or 20 pounds in weight, and that his skin had been growing darker for at least a year. For the past six months he had felt unable to work; there were no aches or pains and no digestive disturbances at this time.

Examination showed a well built man the peculiar color of whose face and hands at once arrested attention; the skin was brown something like one sees in Italians who have been much exposed to the sun. The hands, face and especially the back of the neck were quite dark, the body being quite a bit lighter in color. The buccal mucous membrane was anaemic, but there were no pigmented spots. The teeth were in bad condition, the gums being spongy and bleeding easily reminding one of scurvy. Physical examination of the chest and abdomen were negative, the pulse was small, regular, of poor tension. The blood pressure varied from 75 to 90 m.m. There was no tenderness in the suprarenal regions. The 24 hour urine was normal in amount, contained some pus at the time of his admittance which, however, cleared up under urotropin. At later examinations it was found normal. Blood examination showed 3,500,000 erythrocytes, no leukocytosis and no plasmodia. Haemoglobin was 55 per cent. Repeated examination of the stool failed to show occult blood or signs of parasites. He was under observation a little more than 10 weeks and grew progressively weaker throughout this period although there were days when he expressed himself as feeling much stronger.

After about the fourth week he vomited occasionally and later had attacks of diarrhea; these seemed to come on after an indiscretion in diet at first, later they occurred spontaneously and toward the close were more or less constantly present.

Adrenalin, and later suprarenal gland, was administered and a rise in blood pressure and in strength noted, but soon these returned to their former state and the patient continued to lose ground. Finally he became bedridden for the last four weeks of his life and about two weeks before the end we noticed a peculiar branny desquamation on the cheeks and the face similar to what we had seen in the other case. At the same time we noted a few small pigmented spots on the buccal mucous membrane. He usually lay on his side "curled up" as it were, when asked to straighten out his legs he had peculiar cramps in the quadratus femori and the abdominal muscles that made him draw up his legs again. His temperature was constantly subnormal and the pulse scarcely perceptible. About ten days before his death he refused all food and died of asthenia on May 20th.

The autopsy held three hours after death showed old pleural adhesions on both sides and a small tubercular scar in the upper lobe of the left lung. The heart was normal, the myocardium soft and friable. The spleen was normal, the capsule thickened (perisplenitis). The left adrenal was absent no trace of the same being discoverable even on close search. In the region of the right suprarenal we found a piece of dark tissue about $\frac{3}{4}$ inch long and $\frac{1}{8}$ inch in diameter in which one could recognize atrophic adrenal tissue microscopically. The abdominal lymphatics were somewhat enlarged, the other organs were normal. There were no scars or adhesions in the region of the adrenals.

A third case in which the tentative diagnosis of Addison's disease was made but not substantiated at the autopsy is reported to illustrate the difficulties in diagnosis and to record a rare condition.

The patient, a lady 47 years old, entered the hospital last November, although she had been under observation in the clinic several months previous to that time. The family and previous history show nothing of importance. Her chief complaint, weakness and inability to work, had been coming on for about a year but had grown very much worse in the last few months; she had lost in weight and had been troubled with diarrhea a good deal. She also complained of pains in the back and the abdomen and had herself noted that her face was somewhat darker than usual and that her arms were becoming freckled.

Physical examination was negative except for very faint heart sounds and a weak pulse. The blood pressure was 80 and it was not possible to note any increase in blood pressure after giving suprarenal extract. Addison's disease seemed the most probable diagnosis and the Grawitz treatment was instituted but the patient rebelled against the stomach tube and would not retain the enemata so that this line of treatment had to be stopped. Soon after this she refused to take her medicine and later refused food eventually becoming stuporous. She died the latter part of January and the autopsy showed normal adrenals, an annular adenocarcinoma of the jejunum and an acute suppurative interstitial myocarditis.

AN INTERESTING GALL BLADDER CASE.

By WM. S. DEUTSCH, M. D., of St. Louis.

In June of 1907, I was called by Dr. M. G. Guhman to see Mrs. H. with him at the Washington University Hospital. The case presented the following conditions:

The woman, a German, 62 years of age, well nourished and a good color, had been complaining for some weeks with pains in her lower abdomen, accompanied by some nausea, loss of appetite, and a general feeling of malaise.

Upon examination of her abdomen, I found it somewhat distended, especially the lower portion, and decided tenderness to the touch in the right iliac region. The epigastrium, as well as the rest of the upper abdomen, was free from pain and distension. The patient said her bowels had not moved for several days, although this she said was nothing unusual. Temperature was 101 F., pulse 100, intermittent and of poor volume. The urine showed chronic Bright's disease. The blood gave no leucocytosis, and the other organs gave negative findings.

Had the patient been a younger woman, notwithstanding the fact that her kidneys were bad and her pulse intermittent, I would certainly have operated at once, expecting to find some appendix disease. As it was, I decided to watch her, emptied her bowels, put her on the usual hot application and rest treatment, and having her in the hospital, was ready to operate on her at any minute should her symptoms become alarming, in the meanwhile prescribing for her kidney and heart action.

Her temperature and pain gradually subsided and her bowels moved freely following the enemas, the stool being practically bile free. After a week, she was able to leave the hospital for her home.

I must acknowledge that I felt my patient had gotten over her spell, and my diagnosis, while leaning towards appendicitis, was in many respects wanting, and I asked her physician to keep me posted as to her future.

We were not long kept in doubt as to what turn the case would take, for after two weeks at home I was called to see her in a very severe attack of what I took to be a typical gall bladder spell, with excruciating pain in the epigastrium, chill and fever and distension over the gall bladder and stomach area. Now, too, I could see a slight icterus which the patient said had existed for several days. I sent her to the Jewish Hospital and operated on her the following day.

Under ether, I made the ordinary Mayo-Robson incision through the right rectus and came on to an adhesion of the omentum to the liver. After thoroughly walling off, with gauze strips, I sought my way

cautiously to the gall bladder region, my finger at once encountering free pus coming from what was left of a perforated, gangrenous gall bladder. There were no stones to be found and I then excised a small piece of the sloughing gall bladder wall for microscopic examination. After putting in the usual rubber tube drains, I filled the cavity with gauze and inserted some through and through sutures, then hastened the patient off the table. She had a few days that were quite stormy, during which a great deal of bile and pus drained from the opening, and after four weeks left the hospital with a small suppurating fistula, which made several attempts at closing only to break open again. For the past two months, the wound has remained closed and the patient feels well. She is gaining in weight and strength and while her bowels require purgatives, the stool is of a normal color. As the microscopic report was non-malignant, I can predict that the patient's condition will remain satisfactory.

I feel that this case exemplifies a class in which the symptomatology is misleading, and again because, contrary to most cases of septic, gangrenous, perforating gall bladders, the outcome was not fatal. I am of the opinion that her first attack, while it had a number of signs pointing to appendix involvement, was primarily caused by the gall bladder lesion giving these reflex signs in the lower abdomen. I take the case to have been one of those phlegmonous, perforating inflammations of the gall bladder, resembling in pathology the disease in the appendix and like it, ending in gangrene and pus formation. Mayo Robson says of these cases that the second attack usually comes on suddenly, becomes quickly serious, and like the perforating appendix cases, the bacterial infection is so violent that a complete destruction of the gall bladder occurs.

Not having found any stones, and having gotten the history of typical gall bladder colics in her earlier life, I am inclined to believe that this case was one of a long standing, chronic, non-calculous, cholecystitis ending in suppuration, gangrene and perforation.

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THE CASE OF JONATHAN SWIFT.

By GEORGE M. GOULD, M. D., of Ithaca, N. Y.

"HEREDITY." To eyes with "Twenty-fifteen" acuteness—those without the myopia of "Science," the astigmatism of prejudice, or the amblyopia of disuse, to eyes that are the glad servants of free intellect, the medical case of Jonathan Swift is, of all, the most pathetic, even the most tragic. A good-sized book has been written upon it, and by a good head, ending in the confession of a greater mystery than that with which it began. And learned monographs upon the subject have left it clouded in more impenetrable confusion than before. Because by necessary or chosen error, the authors recommitted the ancient blunder of careless study of the unknown disease of the unknown patient, mistakenly assuming the diagnosis to be a disease that never existed, either in this or in any patient. For Science does not always beget sense, and erudition by no means brings wisdom. Almost the only striking instance of the olden philosophy of Swift's disease that looks most modern is that which traces it to the mysterious unknown God, Heredity. It was indeed due to the modern-looking mind of Mr. Deane Swift:*

"As one enterprise after another failed, the store of money dwindled; his nerves were shattered; ultimately, what may, to some extent, have been a family scourge of insanity, fell on him, and his mind gave way. His death soon followed, in 1688." (Of Godwin Swift, his uncle.) (Craik).

"The Dean's father in particular," says the note, "was swung against the wall, and the violence of the blow laid him for dead upon the floor. He was then two years old; he was all his life subject to a giddiness, and so in like manner, were the Dean and his sister. It was supposed the disorder was owing to this accident. This new origin for the Dean's malady is probably due only to Mr. Deane Swift's fertile imagination." (Craik).

The latest erudite monograph on Ménière's disease would probably talk just that way about giddiness and heredity. We may be thankful that Ménière invented his disease so long as 116 years after Swift's death, and be correspondingly sorry that it could not have been as much later.

YOUTH AND EARLY MANHOOD. Concerning one who lived so long ago there is of Swift a remarkable fulness of information because the intensity of the interest of contemporaries and of aftercomers has well preserved the records of correspondence, anecdote, etc., both of Swift

*A relative of Dean Swift.

and of his friends. And as the ancient childishness of Medical Science had not yet given way to modern dogmatism, craze of theory, and modernity, the facts were naively left undistorted.

Swift stoutly stuck to it that during his college days he had not been idle but simply "dull," that he was "stopped of his degree for dullness and insufficiency." He even spoke of himself as a "dunce." Swift dull? Even in boyhood? His birth-cry must have been a clear cut protest of wit or of satire! That of Swift must be the history of many boys who really have been the reverse of dull, but whose inability to study was not understood by themselves, their teachers, friends, or doctors. We come upon the startling reason when we read that the well-known excess and fury of physical exercise which has dominated the lives of so many other sufferers afflicted with Swifts' disease, broke forth so early as 19,*—and because of eye-work:—

"He was reading at this period about sixteen hours a day. In the midst of this reading, he took that regular and violent exercise which almost to the end of his life he found to be an absolute necessity; exercise of that fierce and excited kind which rather served as an escape from too violent emotions than as an aid to his physical health. At Moor Park, as, curiously enough, at many another spot where Swift lived, tradition names a small hill close to the house, up and down which Swift is said to have run, when the strain of mental excitement made a break of a few minutes necessary." (19.)

"The youth had not completed a year's residence, when, as he says himself, he returned to Ireland by advice of physicians who weakly imagined that his native air might be of some use to recover his health." (23.)

And even the psychologist of that time could be as maladroit as any of to-day:—

"And this is which a person of great honor in Ireland (who was pleased to stoop so low as to look into my mind) used to tell me, that my mind was like a conjured spirit, that would do mischief if I would not give it employment." (23.)

How it was with him for the next seventeen years, we may only surmise from the following sentences:—

"He once had a narrow escape from burning himself and the household, by reading in bed, and letting the candle set the bed-clothes on fire, an accident which he had to keep from the knowledge of his hosts by disbursing some guineas of hush money." (32.)

"The same characteristic, which it is difficult to disconnect from the forebodings of mental disease that cast a shadow on his life, now led him to stir to exasperation, and yet all unconsciously, the religious sentiments of those whose church he desired to defend." (36.)

"The bitter humor, the self-torture, the cynicism from whose ravages he was himself the chief sufferer, had not as yet been stirred to their depths." (37.)

"The illness that was to torture him through life had not yet suggested to him its full strength and pertinacity." (37.)

*The age of Swift at the time indicated is placed at the end of the quotations to follow, from his biographies or from his own correspondence, etc.

SICK HEADACHE, OR "MIGRAINE," RETURNS IN OMINOUS EARNESTNESS WITH PRESBYOPIA. And this second outbreak reminds the observant patient of the first violent warning given him at the age of 29, about eleven years previously.

"I have been confined near two months this winter and forbid pen and ink by my physician; though I thank God, I was more frightened, as it happened, than hurt. I had a colick about the year 1696, that brought me to extremity, and all despaired of my life, and the news-letter reported me dead. It began at the same time of the year and the same way it did then, and the winters were much alike; and I verily believe had I not had the assistance of my old physician, Sir Patrick Dun, I should have run the same course which I could not have supported. But with a little physic and the Spa and Bath waters, I escaped without other hardships than keeping at home; and so much for private affairs." (40.)

"Ever since persecuted with a cruel distemper of giddiness in my head, that would not suffer me to write or think of anything and of which I am now slowly recovering." (40.)

"His memorandum books, during this winter of 1708-09, are filled with agonized references to these tortures. All the year, he tells us, he was in England; and in another corner of the notebook, he has jotted down the words *in suspense*."

1708. "Nov. From 6th to 16th often giddy. God help me. So to 25th, less. 16th Brandy for giddiness, 2s. Brdy 3d. Dec. 5th Horrible sick. 12th Much better, thank God and MD's prayers. 16th Bad fitt at Mrs. Barton's. 24th Better; but dread a fitt. Better still to the end." 1709. Jan. 21st an ill fitt; but not to excess. 29th Out of order. 31st Not well at times. Feb. 7th Small fitt abroad. Pretty well to the end. March. Headache frequent. April 2. Small giddy fitt and swimming in head. MD and God help me. August. Sick with giddiness much." 1710. "Jany giddy. March. Sadly for a day. 4th. Giddy from 4th. 14th Very ill. July. Terrible fitt. God knows what may be the event. Better toward the end." (Forster) (41).

Much foolish writing of Swift's "epileptic tendency" has been allowed, because of the medical ignorance of the disease or symptoms called sickheadache, but perhaps as much by reason of Swift's natural use of the term "fitt." In Swift's time the word meant simply an attack of some severe illness, or a recurrent attack of a periodic or constitutional malady. The word aptly denoted a seizure of any severe but transitory ailment. Thus in 1547, Surrey speaks of "shaking fits;" in 1601 Shakespeare uses the word of the paroxysm of "a feavor;" in 1667 Allsopp writes, "Taken with a fit of the collicke;" in 1691 the Bishop of London had a "fit of the stone;" and in 1725 the expression "The fits of intermittent fever," "of gout," etc., were common. Even to-day we hear of "A fit of coughing," etc. The "colick," the "bad fit," the "ill fit" of Swift was plainly what we know so well in thousands of patients, the acute outbreak of sickheadache, consisting of violent vomiting, headache, etc. That Swift had but one attack or noteworthy "fit of the

colick" prior to the more frequently recurring ones at the onset of presbyopia, is in accord with the daily experience of oculists now. From 1861, of the first fifty cases reported of so-called "Ménière's Disease" (sickheadache only and truly) the ages of the patients average 45 years,—a most suggestive fact for the awake oculist,—but not for aurists and other physicians! Moreover, note that above 200 years ago the same causes produced it, the same course characterized it, the same pseudo therapeutics followed it. Reading 16 hours a day hints the story of the cause; the patient is in "tortures," "suspense," and thinks he has incipient insanity, mysterious inherited disease; he is "cured" by quitting near-work with the eyes, by violent exercise, by the "old physician" and his "physic," and by going to "the Spa and Bath waters," and—the disease recurs, goes on from bad to worse, and finally to worst!* And the two hundred years of this sad, solemn ignominious history are likely to go on for two hundred more before the farce is ended. Even to-day while a few good oculists report thousands of cases cured by scientific refraction of the eyes, the most report that the disease is not caused by eye-strain.

Craik, I am convinced, is in error when he says that Swift in 1690, aged 22, was "already suffering from his life-long enemies, giddiness and deafness, which were to continue with such persistency, etc." I can find no warrant for the statement as regards deafness, and the histories of many similar cases in my practice make the appearance of this symptom at this age highly improbable. The writer's pen ran away with him, a bit of proof of which is given in the same sentence, "and the advice of physicians gave him an excuse for returning to Ireland to recruit his health." The first time Swift uses the word "deafness" is at the age of 52. Giddiness he may have had at any time of life, and at 44 he says he had had this symptom "twenty-three years by fits." The ingravescence of his symptoms as presbyopia advances** is illustrated in the more vague terms, more frequently noted:—

"I have had no fit since my first, although sometimes my head is not quite in good order." (43.)

"During April he was further troubled by a tedious and painful illness which he calls the shingles." (44.)

"My head is still in no good order." (44.)

"Pray God mend poor Ppt's health; mine is but very indifferent. I have left Spa water; it makes my leg swell." (44.)

"A fortnight in Dublin very sick." (45.)

"I don't sleep well, and therefore never dare to drink coffee or tea after dinner: but I am very seepy in a morning." (45.)

*"Of what use," say my critics, "to retell these old indefinite histories of long dead men?" Of none to the critics. Such clinics are not indefinite. It is true these patients are dead, but those of the critics are not dead,—at least most of them, and they have the identical diseases of the older and more recent dead ones.

**Noteworthy is also the long extension of presbyopic symptoms in Swift's case into his very last years, from 70 to his death, caused by contempt of spectacles, and abuse of his eyes.

"I heard from Mr. Lewis that your head is so much out of order." (45) (Miss VanHomrigh to S.)

"But my health has not yet suffered me." (45.)

"My health requires it." (45.)

"I was in very ill health and am since but slowly recovering." (52.)

"My, few hours of health and leisure." (52.)

"Considering my state of health." (53.)

"My health will not suffer it." (53.)

"A sickly man." (53.)

"Remember that riches are nine parts in ten of all that is good in life, and health is the tenth." (54.)

"Out of Health and Humer." (54.)

"I am so much out of order that I could not go to Church." (55.)

By those who excel in the exaggeration of negations I have been persistently charged with all sorts of positive "exaggerations," but especially with the exaggeration of the effects of eyestrain and disease upon the personal character, disposition, habits,—the intellectual and moral caste of the patient. Here is how Swift's discriminating biographer feels about the matter:—

"There is little in the portrait, as there was little probably that attracted the attention of Swift's ordinary acquaintance, to tell of the ravages of disease. Those ravages were already present, but as yet they were only intermittent. Outwardly indeed, Swift's health was good. He had a powerful and muscular physique. The stories of his walks, of his constant, violent exercise, of his coolness and intrepidity when threatened with personal violence, prove that his estimate of his own strength was not mistaken, though, by a fatal error, it drove him to a regimen that encouraged the disease. In all his ailments, his only idea of a cure seems to have been to drive out some superabundant energy by forcing himself to overstrained physical exercise. He lived hard, in the sense that he drew largely on his strength, and seemed ever to be striving to tame his energies rather than to conserve and regulate them into useful servants. But as yet the dire effects of such self-torture were not visible; and Swift was, as his portrait shows him, a man in the prime of life, and in the vigour of an almost superabundant strength; knowing his own powers, and yet without the bitterness of those later antipathies, which checked the free flow of the gracious kindness that endeared him to a circle such as gathered at Will's or at the St. James's Coffee-House, in those earlier years." (41.)

The biographer, of course, makes the common mistake of supposing the ferocious demand for physical exercise "encouraged the disease." The biographic clinics of every severe eyestrain-sufferer in the past, or in the office of to-day's oculist, demonstrate that that is the sole way the outraged nervous system has of stopping the insult, and also of disposing of the excess of irritation,—of normalizing the nerve-centers and cerebral storage and recuperative mechanisms. It is nature's therapeutic device avidly seized upon if the physical organism will endure, and if the will chooses or is of the kind to command.

SWIFT'S "GIDDINESS." Giddiness, vertigo, or dizziness, is a somewhat less common symptom of eyestrain, migraine, etc., than headache and digestional affections. At 44, Swift says he had had fits of giddiness for some 23 years. The jottings are as follows:—

"I have had my giddiness twenty-three years by fits." (45.)

[Beginning therefore at the age of 22.]

"* * * pursued with a giddy head." (52) (Mr. Prior to S.)

"* * * the giddiness I am subject to, and which this moment I am not free from." (54.)

"Afflicted at present with a giddiness in my head." (57.)

"* * * so ill with a giddiness." (57.)

"His health, moreover, was failing, and the attacks of giddiness and deafness from which he had suffered much in late years, returned oftener and lasted longer." (58.)

"Yet my giddiness alone would not have done, if that unsociable comfortless deafness had not quite tired me." "I believe this giddiness is the disorder that will at last get the better of me; but I would rather it should not be now; and I hope and believe it will not for I am now better than yesterday. Since my dinner my giddiness is much better and my deafness is a hair's breadth not so bad. It is just as usual, worst in the morning and at evening. I will be very temperate; and in the midst of peaches, figs, nectarines and mulberries, I touch not a bit." (59.)

"So giddy and deaf." (59.)

"I would take your giddiness, your headache, or any other complaint you have to resemble you in one circumstance of life." (Mrs. Howard to S.) (59.)

"I am in a middling way, between healthy and sick, hardly ever without a little giddiness or deafness, and sometimes both." (60.)

"I had not been above a fortnight recovered from a disorder of giddiness and deafness, which hardly leaves me a month together." (60.)

"Disorders of giddiness and deafness, of which I have frequent returns." (60.)

"I am still in the same condition, or rather worse, for I walk like a drunken man and am deafer than ever you knew me. If I had any tolerable health I would go this moment to Ireland." (60.)

"The giddiness I was subject to, instead of coming seldom and violent, now constantly attends me more or less, though in a more peaceable manner, yet such as will not qualify me to live among the young and healthy." (63.)

"Nothing but an uncertain state of my health (caused by a disposition to giddiness), which although less violent is more constant." (64.)

"The ten days since, I have been much disordered with a giddiness, that I have been long subject to at certain times." (64.)

"Your complaint and mine are not very different, as I imagine. Mine is a sort of dizziness which generally goes off by the headache. Some learned people give it a name I do not know how to spell, a vertico, or vertigo." (65) (Duchess of Queensbury to S.)

"I have been pursued by two old disorders, a giddiness and deafness, which used to leave me in three or four weeks, but now have continued four months." (65.)

"My health is so uncertain that I dare not venture among you at present." (65.)

"I never ride without two servants for fear of accidents." (65.)

"My head is so disordered by returns of my old giddiness, that I cannot yet venture to take those journeys." (65.)

"I have been for three months confined by giddiness and deafness." (66.)

"Constant giddiness in my head and what is more vexatious, a constant deafness." (67.)

"As I was getting on horseback to return, I was seized with so cruel a fit of giddiness which at times hath pursued me from my youth, that I was forced to lie down on a bed in the empty house for two hours, before I was in condition to ride. However, I got here safe, but am this morning very weak, as I always have been for many days after such fits, and in pain for fear of another this day, which makes me write to you while I am able while it be morning." (67.)

"* * * grieved that you are so much persecuted with a giddiness in your head." (68) (Mrs. Pendarves to S.)

"I grow giddier as I grow older." (about 68.)

"I have been this month so ill with a giddy head, and so very deaf, that I am not fit for human conversation." (69.)

THE TINNITUS AND DEAFNESS. The first time that Swift mentions deafness is at the age of 52. This symptom or sequel of migraine may occur at an earlier time of life. It is most rarely complete or sudden in its oncoming, and when it is so, in connection with severe vomiting, it is in all probability the direct mechanical result of the enormous and agonizing strains of the act, sometimes by several methods of production ending in traumatism of the tympanum, the mechanisms of the middle or the inner ear. How much or how severe may have been the attacks of vomiting in this patient's "collickes," it is impossible to say. A careful reading of the following excerpts clearly brings out two overlooked but decisive conclusions:—First, that Swift never became permanently or completely deaf; that he recovered his hearing perfectly, suddenly, and frequently, demonstrates that there never was any serious organic lesion of the mechanisms of hearing,—that is, the deafness was at least for the most part functional, and therefore was probably due to a reflex neurosis. As his most severe eyestrain was the most certain, severe, and continuous source of his illnesses and infirmities, the reflex neurosis started in the extreme abuse and irritation of his eyes. In the second place, when Swift uses the word, "deafness," he plainly confounds it with the tinnitus which was with him more and more frequently as the years wore on, and which broke ever more tormentingly upon his attention. In a private patient, this maddening roaring and rushing as of "the noise of seven water-mills" or of a "hundred oceans rolling in the ears," to use the words of Swift, existed for 18 years, and nearly drove the man into insanity, until a pair of spectacles ended it all in a day. Swift frequently couples the words "noise and deafness" in a significant manner. Even at 70 Swift speaks

of "a noise in the head which deafens me." The tinnitus was certainly the most burdensome of Swift's symptoms, and, as in private patients, was the cause and reality to which he often gave the name "deafness."

"Once in five or six weeks I am deaf for three or four days together." (52.)

"When my deafness comes on I can hear with neither ear, except it be a woman with a treble and a man with a counter-tenor." "This deafness unqualifies me for all company, except a few friends with counter-tenor voices, whom I call names if they do not speak loud enough for my ears." "I sometimes receive one or two friends and a female cousin with strong, high tenor voices." (53.)

"a Condolence on my Deafness. Mr. Lebrunt was right in my Intentions, if it had continued, but the Effect is removed with the Cause." (53.)

"I have been these five weeks and still continue so disordered with a Noise in my Ears and Deafness that I am utterly unqualified for all Conversation or thinking. I used to be free of these fits in a fortnight but now the disease, I fear is deeper rooted, and I never Stir out, or suffer any to see me but Trebbles and countertennors, and those as seldom as possible." (53.)

"Almost three weeks pursued with a Noise in my Ears and Deafness that makes me an unsociable Creature, hating to see others, or be seen by my best Friends, and wholly confined to my Chamber—I have often been troubled with it but never so long as now, which wholly disconcerts and confounds me to a degree that I can neither think nor speak nor act as I used to do, nor mind the least business even of my own." (53.)

"I am but just recovered of my Deafness which put me all out of Temper with myself and the rest of Mankind. My Health is not worth a Rush nor consequently the Remaining Part of my life." (54.)

"So pestered with the return of a noise and deafness in my ears." (56.)

"Tormented with an old vexatious disorder of a deafness and noise in my ears, which has returned, after having left me above two years, and makes me unsupportable to others and myself." (56.)

"Cruelly persecuted with the return of my deafness, that I am fit for nothing but to moap in my chamber." (56.)

"I have been this month past so pestered with the return of a noise and deafness in my ears, that I had not the spirit to perform the common offices of life, much less to write to your excellency." (56.)

"I am now relapsed into my old Disease of Deafness, which so confounds my Head, that I am ill qualified for writing or thinking." (56.)

"I have the noise of seven Watermills in my Ears and expect to continue so above a month, but this sudden Return has quite discouraged me. I mope at home and can bear no Company but Trebles and counterteners." (56.)

"As far as my confused head will give me leave to think." (56.)

"So long afflicted with a deafness." (57.)

"I have been above seven weeks ill of my old Deafness and am but just recovered." (about 57.)

"* * * being not in a Condition to converse with any Body, for want of better Ears and better Health." (57.)

"His old ailments returned in great force. He had lived too well at Pope's house; and so he thought had brought back his giddiness. 'Cyder and champaign and fruit,' he wrote, 'have been the cause.' His deafness was worse than ever. 'I have,' he said, 'a hundred oceans rolling in my ears, into which no sense has been poured this fortnight.'" (58.)

"This cruel disorder of deafness, attended with giddiness, still confines me." (59.)

"I am extremely troubled at the returns of your deafness." (59) (Mr. Pope to S.)

"* * * bawl when I am deaf, and tread softly when I am only giddy and would sleep." (about 59.)

"In such a miserable country, such a Clymat, and such roads, and such uncertainty of Health. I would never if possible be above an hour distant from home—nor be caught by a Deafness and Giddyness out of my own precincts, where I can do or not do, what I please; and see or not see whom I please." (59.)

"Ten days ago, my old deafness seized me, and hath continued ever since with great increase; so that I am now deaffer than ever you knew me, and yet a little less I think than I was yesterday; but which is worse, about four days ago my giddiness seized me, and I was so very ill that yesterday I took a hearty vomit, and though I now totter, yet I think I am a thought better; but what will be the event I know not; one thing I know, that these deaf fits used to continue five or six weeks, and I am resolved if it continues or my giddiness, some days longer, I will leave this place." (59.)

"I have been now ill about a month, but the family are so kind as to speak loud enough for me to hear them; and my deafness is not so extreme as you have known." (60.)

"I continue very deaf and giddy." (60.)

"Denying myself to everybody, till I shall recover my ears." (60.)

"* * * my old disorder of deafness being returned upon me so that I am forced to keep at home and see no company; and this disorder seldom leaves me under two months." "My Head being too much confused by my present Disorder." (60.)

"Yesterday I relapsed again, and am now so deaf that I shall not be able to dine with my Chapter on our onely festival in the year." (60.)

"A foreign language is mortal to a deaf man. I must have good ears to catch up the words of so nimble a tongued race as the French, having been a dozen years without conversing among them." (61.)

"That very condition of deafness which made you fly from us while we were together." (66) (Pope and Bolingbroke to S.)

"My common illness is of that kind which utterly disqualifies me for all conversation; I mean my deafness." (68.)

"I feel all the infirmities of age, but less of deafness than of any other." (69.) (Lewis to S.)

"I am plagued this month with a noise in my head which deafens me, and some touches of giddiness—my old disorders." (70.)

HEADACHE AND SICKHEADACHE. At the age of 59, writing to a friend, Swift says:—

"About two hours before you were born I got my giddiness, by eating a hundred golden pippins at a time at Richmond; and when

you were four years and a quarter old, bating two days, having made a fine seat about twenty miles further in Surry, where I used to read and—, there I got my deafness; and these two friends have visited me, one or other, every year since, and being old acquaintances, have now thought fit to come together. So much for the calamities wherein I have the honour to resemble you; and you see your sufferings are but children in comparison of mine; and yet to shew my philosophy, I have been as cheerful as Scarron. You boast that your disorders never make you peevish.” (59.)

This quizzical passage is of suggestive interest in showing that Swift kept the dates of his illnesses very exactly in mind, and also the general nature and order of them. He traces their origin to the stomach, or to an attendant symptom, “collicke,” with of course, the unmentionable vomiting. Were the “one hundred golden pippins” the sole cause of the acute indigestion or were they only a secondary one? It is a most common fact that patients have an amusing habit of tracing the diseases of a lifetime to some trivial accident or “fit” of some passing illness in childhood or youth. “Jumping off a box,” “a blow on the forehead,” “a fall,” “ever since the measles,” “a bad scare,” “scarlet fever broke me down,”—and a hundred similar *post hoc, propter hoc* illogicalities conceal the habitual lack of close observation as regards health on the part of most patients. With Swift’s eyes and their abuse (he scorned glasses, and had only “tallow dips” for lighting) he was fated to have “colical pains,” “disordered head,” “vomiting and sweating,” “headache,” and most likely, “giddiness” and “deafness” also,—in a word, “Migraine,” or sickheadache, or, as Swift says, “sickness in my stomach.” So persistently recurrent is the headache, giddiness, etc., that he says he has had attacks of these troubles every year since they began. A few excerpts illustrate:—

“Waked with the headache.” (about 46.)

“My health (a thing of moment) is somewhat mended; but, at best, I have an ill head and an aching heart.” (52.)

“I have been this past Fortnight as miserable as a Man can possibly be with an Ague, and after vomiting, sweating and Jesuits Bark, I got out to-Day, but have been since my beginning to recover, so seized with a daily Headake, that I am but a very scurvy recovered Man.” “My head is too ill to write or think.” (53.)

“I believe no head that is good for anything is long without some disorder, at least that is the best argument I had for anything that is good in my own.” (58.)

“I am in such a condition of health, that I cannot possibly travel. Dr. Sheridan to whom I write this post will be more particular, and spare my weak disordered head.” (59.)

“I am ten times deafer than ever you were in your life; and instead of a poor pain in my face, I have a good substantial giddiness and headache.” (59.)

“I am grown leaner than you were when we parted last, and am never wholly free from giddiness and weakness, and sickness in my

stomach,* otherwise I should have been among you two or three years ago, but now I despair of that happiness. I ride a dozen miles as often as I can, and always walk in the streets except in the night, which my head will not suffer me to do." (66.)

"FRENZIED PHYSICAL EXERTION." In other studies, and in the daily practice of discriminating and observant oculists one finds that the great sufferers from severe eyestrain, especially if people of strong wills and good vitality of body, have been compelled to inordinate physical exertions, walking, traveling, riding, etc. The symptom is almost pathognomonic of eyestrain. In every biographic clinic of great literary workers, scientists, musicians, etc., in which this symptom appears, the connection is evident, the significance pointed. The inquiry should suggest to every clinician and especially to every oculist the most painstaking and skilled examination of the refraction of the eyes. In Swift's case, the frenzied physical exertion began early in life and continued until the body was worn out. It was the unconscious wisdom of the organism exaggerated by the patient's conscious and drastic will.

"He was reading at this period about sixteen hours a day. In the midst of this reading, he took that regular and violent exercise which almost to the end of his life he found to be an absolute necessity: exercise of that fierce and excited kind which rather served as an escape from too violent emotions than as an aid to his physical health. At Moor Park, as, curiously enough, at many another spot where Swift lived, tradition names a small hill close to the house, up and down which Swift is said to have run, when the strain of mental excitement made a break of a few minutes necessary." (19.)

"Walk however, he does whenever he can, for the sake of his head." (42.)

"Walking as much as he can for his little disorders toward giddiness (for he has no actual fits)." (42.)

"I have been at this town this fortnight for my health, and to be under a necessity of walking to and from London every day." (43.)

"The two pair of Shoes, extraordinary" which Swift bespoke were, no doubt, by way of preparation for the worst. If the plague came he would do his best to preserve his health by exercise."

*As usual, one finds that the friends of most of the patients whose biographic clinics are studied, especially if literary, have precisely the same complaints and symptoms. For instance:

"Mr. Pope has his usual complaints of headache and indigestion, I think, more than formerly." (Dr. Arbuthnot to S.)

"My ailments are such, that I really believe a sea-sickness, (considering the oppression of colical pains, and the great weakness of my breast) would kill me." (Pope to S.)

"My ill stomach, and a giddiness I was subject to, forced me, in some of those fits, to take a spoonful of usquebaugh." (Miss Richardson to S.)

"Better, as to headaches; worse as to weakness and nerves. The changes of weather affect me much; otherwise, I want not spirits, except when indigestions prevail. The mornings are my life; in the evenings I am not dead indeed, but sleep and am stupid enough. I love reading still better than conversation; but my eyes fail." (Pope to S.)

"My eyesight is bad, my head often in pain." (Pope to Sheridan.)

"Riding kept him well in Ireland." (43.)

"I am riding here for life." (45.)

"I am riding here for life and think I am something better." (45.)

"You have not kept your promise of riding but a little every day: thirty miles I take to be a great journey." (45) (Miss VanHomrigh to S.)

"I ride about for a little health." (45.)

"He mentions a design he had on leaving for Ireland after he had obtained the deanery, to "walk it" all the way to Chester, his man and himself, by ten miles a day. "It will do my health a great deal of good, and I shall do it in fourteen days." One special walk of his earlier years, also recorded there as if not infrequently taken, deserves a line to itself. It was from Farnham to London, a distance of thirty-eight miles." (45.)

"My head is something better, though not so well as I expected by my journey." (45.)

"I am getting an ill head in this cursed town for want of exercise." (52.)

"I row after health like a waterman, and ride after it like a post-boy, and find some little success." (53.)

"I row or ride every day in spite of the rain, in spite of a broken shin, or falling into the lakes, and several other trifling accidents." (53.)

"If you knew how I struggle for a little health; what uneasiness I am at in riding and walking, and refraining from everything agreeable to my taste." (53.)

"* * * I fear shall continue till my riding days are over." (53.)

"I have not rode in all above poor 400 miles since I saw you, nor do I believe I shall ride above 200 more till I see you again." (54.)

"Yesterday I rode twenty-nine miles without being weary." (54.)

"Riding, walking and sleeping take up eighteen of the twenty-four hours." (55.)

"The Weather has been so unfavourable and continues so, that I have not been able to ride above once." (57.)

"Taking all advantages of fair weather to keep my Health by walking." (58.)

"As to what you call my exercise, I have long quitted it." (60.)

"I am returned to be a rider." (61.)

"Walk ten miles a day." (61.)

"I am sick enough to go to the Bath, but have not heard it will be good for my disorder." (62.)

"I am just going out of town, to stay no where long, but go from house to house, whether Inns or friends, for five or six weeks nearly for exercise." (62.)

"I must ride thrice a-week, and walk three or four miles beside every day." (63.)

"A constant disposition to giddiness, which I fear my present confinement, with the want of exercise, will increase." (63.)

"Valetudinarians must live where they can command and scold, I must have horses to ride; I must go to bed and rise when I please, and live where all mortals are subservient to me. I must talk nonsense when I please, and all who are present must commend it. I must ride thrice a week, and walk three or four miles beside each day." (63.)

"I make a shift to ride about ten miles a-day." (64.)

"I who am so much later in life, can or at least could, ride five hundred miles on a trotting horse." (64.)

"Continuing ill, I write to Mrs. Howard, with my duty to the Queen, took coach to Chester, recovered in my journey." (64.)

"I found myself not well; and was resolved to take a step to Paris for my health." (64.)

"I am extremely concerned to hear the bad state of your health. I have often wished you would be more moderate in your walks; for though riding has always been allowed to be good for a giddy head, I never heard walking prescribed for a strain or any ailment in the leg; and the violent sweats you put yourself into are liable to give colds, and I doubt occasion much of your other disorder." (65) (Ford, letter to S.)

"Fortune has pleased by one stumble on the stairs, to give me a lameness that six months have not been able perfectly to cure." (65.)

"In 1734 he wrote: 'I ride every fine day a dozen miles on a large Strand or Turnpike road.'" (66.)

"For some weeks I was very ill with my two inveterate disorders, giddiness and deafness. The latter is pretty well off, but the other makes me totter towards evenings, and much dispirits me. But I continue to ride and walk, both of which, although they be no cures, are at least amusements." (66.)

"A return of your old disorders of giddiness and deafness; but I still flatter myself that it is not as bad with you as my fears have represented it, which makes me long impatiently to hear how you really are; but I am in hopes your usual *medicina gymnastica* will carry it off." (66) (Rev. M. Philips to S.)

"Exercise is the best medicine for your giddiness." (66.)

"Riding is your *panacea*; and Bathurst is younger than his sons by observing the same regimen." (66) (Bolingbroke to S.)

"I often ride a dozen miles, but I come home to my own bed at night." (67.)

"My disorder is of such a nature, and so constantly threatening, that I dare not ride so far as to be a night from ——— and yet when the weather is fair, I seldom fail to ride ten or dozen miles." (67.)

"Health is not very good, which I endeavour to mend by frequent riding, and fancy myself to find some benefit by that exercise, although not very effectual." (67.)

"I have not an ounce of flesh about me, and cannot ride above a dozen miles a day, without being sore and bruised and spent. My head is every day more or less disordered by a giddiness." (68.)

"My age is not my disability, for I can walk six or seven miles, and ride a dozen. But I am deaf for two months together." (69.)

"I seldom walk less than four miles, sometimes six, eight, ten, or more, never beyond my own limits; or if it rains, I walk as much through the house, up and down stairs; and if it were not for the cruel deafness. I would ride through the kingdom and half through England." (69.)

"escaping from pain only by frenzied physical exertion." (74.)

"The Dean," writes Sir Walter Scott, "was fond of pranks which bordered on childish sports. It will hardly be believed that he sometimes used to chase the Grattans, and other accommodating friends, through the large apartments of the Deanery, and up and down stairs, driving them like horses, with his whip in his hand, till he had accomplished his usual quantity of exercise." (Hill's Unpublished Letters of Dean Swift.)

(TO BE CONTINUED.)

MEDICAL AND SURGICAL PROGRESS.

SURGICAL SHOCK.

A REVIEW OF RECENT LITERATURE.

By MALVERN B. CLOPTON, M. D.

1. SURGICAL SHOCK.—Crile (*Boston Med. and Surg. Jour.*, Vol. clviii, No. 26).
2. VASOMOTOR RELATIONS.—Porter (*Boston Med. and Surg. Jour.*, Vol. clviii, No. 3).
3. EFFECTS OF INJURY OF THE BRAIN ON THE VASOMOTOR CENTER.—Porter (*Am. Jl. Phys.*, 1907, Vol. xviii).
4. EFFECTS OF UNIFORM AFFERENT IMPULSES UPON THE BLOOD PRESSURE AT DIFFERENT LEVELS.—Porter (*Am. Jl. of Phys.*, 1907, Vol. xv).
5. THE NATURE OF SHOCK.—Meltzer (*Arch. of Inter. Med.*, Vol. i, No. 6).
6. ACAPNIA AS A FACTOR IN SHOCK.—Henderson (*Brit. Med. Jour.*, 1906, Vol. ii).
7. THE COELIAC AND MESENTERIC PLEXUSES AND THEIR RÔLE IN ABDOMINAL SHOCK.—Buerger and Churchman (*Surg. Gyn. and Obst.*, Vol. iv., No. 3. Also *Mitt. a. d. Grenz. Med. u. Chir.*, 1906, xvi).
8. A CONSIDERATION OF THE STATE OF THE AUTONIC NERVOUS SYSTEM IN ACUTE SURGICAL CONDITIONS.—Walton (*Lancet*, 1908, Vol. ii, Nos. 1 and 2).

The most notable work of the past few years attempting to clarify our views of shock, has been done by Crile. To refresh our memory of these observations his conclusions are best given in his own words as delivered before the Harvey Society in January of this year.

"We shall assume as our premises that the fall in the arterial blood pressure is the essential phenomenon; that without a fall in the arterial pressure there is no surgical shock; that the fall in the blood pressure is due to traumatism of the nerve tissue and psychic stimuli. We further assume that the ultimate lesions of shock are the same as those of hemorrhage and that for all practical purposes the phenomena of shock are expressions of altered physiologic functions. We will assume that death from shock, like death from hemorrhage, presupposes the failure of the circulation, producing certain degeneration of the central nervous system: that there is, indeed, but little essential difference, except as to causation, between death from hemorrhage and death from shock. We will further assume that the fall in the blood pressure is mainly due to a

functional impairment or breakdown of the vasomotor centers; that the heart and blood vessels themselves are only secondarily affected, principally by reason of the anemia of low blood pressure; that the cause of the functional impairment or breakdown of the vasomotor centers is due in part to the effect of excessive afferent stimuli and in part to the progressive anemia of these centers, there occurring a species of vicious circle. We will further assume that these shock-producing afferent impulses are but little influenced by general anesthesia, but are totally blocked by cocainization of their conducting paths."

It is possible to differentiate between concealed hemorrhage and shock if repeated and accurate observations are made, as in shock there is no rise of a leucocyte count and little or no change in the hemaglobin or red count, but in hemorrhage the first and immediate change is a rise in the leucocytes and a little later the hemaglobin and red count begin to fall and continue progressively to drop, up to twelve hours after hemorrhage has stopped.

The psychical element plays an important role in the causation of shock and every effort should be made to minimize this influence, particularly as it and the influence of the anesthetic are both in the nature of predisposing factors and in a measure are preventable. A routine surgical anesthesia is not desirable, but various combinations of the means at hand should be used to meet different conditions.

In health there is a normal physiologic balance in the circulatory system, which permits the loss of 3 per cent. of the blood in adult life without any change in pulse or blood pressure. This is due to the control of the vessels by the vasomotor center, which, however, may become exhausted either because of a too long sustained effort, or due to a decrease of the blood supply to this center, as the blood pressure throughout becomes lowered. In shock, this vasomotor center is impaired; and if there is an accompanying loss of blood, the combined influences react on each other, increasing the effect of both. These centers are much impaired in the course of acute infectious diseases, and surgical interference is tolerated less than in health. The technic of operations determines the amount of blood lost and the amount of trauma to tissues, and as the influence of these factors decides the extent of shock, the utmost effort is needed to deal gently with all tissues, particularly those richly supplied with nerves, and to prevent all loss of blood. Thus the prevention of shock is the way to combat it, and the surgical care necessary in operations upon the various regions of the body, is given in detail. In traumatic shock, operation may be performed immediately if the large nerve trunks in the extremities are cocainized beforehand, but if this is not possible it is better to wait for reaction. Collapse with suspended animation arises from anesthetic accidents, asphyxia, reflex inhibition and hemorrhage. Crile finds that the various tissues endure total anemia differently. The excised heart may be made to beat even after 48 hours. The resuscitation of asphyxiated animals, by infusion of fluids with adrenalin, and the use of artificial respiration and heart massage, showed that up to 6 minutes all the functions returned. Of the central nervous centers that of respiration was the most resistant, a moderate respiratory action was obtained as long as 40 minutes after animation was suspended. The vasomotor center was frequently resuscitated after 15 minutes, but that part of the brain presiding over conscious life (the psychic and mental state) was in no instance resuscitated after total anemia of 8 minutes, though always after 4 minutes. This may explain those cases of compression of the brain operated for tumor, hemor-

rhage or abscess, which were entirely successful as far as removing the pressure, but consciousness was never regained. In another group of cases in which, at the time of operation, there was increased intracranial pressure but with a slight consciousness remaining, after operation consciousness is never regained. In these cases it is fair to presume that during operation, as a consequence of the anesthetic, of hemorrhage, of posture of the patient, or of all combined, the slight margin of circulation supplied to the brain, which gives it its flicker of function, was lost for 6 minutes or more. In such instances it is necessary to increase the blood pressure during the entire operation.

By direct transfusion of blood it is possible to raise the blood pressure above normal and keep it there. When salt solution is used even under great pressure it was impossible to raise the blood pressure but slightly and this was not sustained.

"After having found that the blood of normal animals of the same species is physiologically interchangeable; that the blood pressure may, in normal animals, be raised and sustained; that if the transfusion be given with two great rapidity the pulmonary circulation may be so embarrassed as to precipitate an acute and even fatal edema of the lungs; that if the transfusion is given more slowly the blood may be transferred from the pulmonary to the systemic circulation in safety; that an excessive transfusion thus given may cause serious damage to the abdominal viscera, even causing immediate death; and after having established a safe technic and the limits of safety, we then experimentally inquire whether or not, by the transfusion of blood, its volume may be sufficiently increased to fill up the relaxed vascular system, to cause more blood to reach the heart, and so increase the outflowing stream, hence, help to overcome the cerebral anemia of shock, which in turn would be followed by an increased activity of the vicious circle of anemia by the beneficent circle of hyperemia."

Transfusion of blood was sufficient to raise the blood pressure in all grades of shock, and also in over-transfused animals it was impossible to kill by shock alone. In these over-transfused animals, the spinal cord or the medulla might be destroyed, or the animal decapitated, and respiration continued artificially and the blood pressure would be evenly sustained; the elasticity of the overfilled vessels created a resistance against which the heart must act, resulting in a pressure of 80 to 140 mm. of mercury in the aorta, hence in the coronary artery. Thus, in clinical cases with normal hearts, direct transfusion may be used as a specific treatment either to prevent shock or to combat it.

Porter believes a clear distinction should be made between the symptoms of shock and shock itself. There is no dispute about the clinical entity, but shock, on the other hand, is a pathologic state, the data of which are at present hypothetical. The definition which declares that the vasomotor cells are depressed or exhausted by excessive afferent stimuli, and that the fall in blood pressure, etc., are due to this depression, is questioned. May not the change in heart beat and temperature and nervous system be due to low blood pressure? He offers no theory for shock, but hopes his experiments may remove misconceptions. The necessity of studying the parts as well as the whole will be understood when it is remembered that the vasomotor system is composed of three neurons, one in the bulb, a second in the spinal cord and a third outside the cerebrospinal axis. He divides the functions of living into two groups; one fundamental, embracing respiration, maintenance of body, head, etc., the other accessory, representing the skilled movements in

the cortex. In a number of experiments on many kinds of animals with stimulation of the afferent nerves an almost uniform rise of blood pressure occurred and he believes that inasmuch as animals so diverse give practically the same response, that the maintenance of blood pressure belongs to the fundamental functions and consequently can be judged as comparable to like responses in man. In measuring the change in blood pressure he employs the percentile values. That is, if the blood pressure at the beginning of an experiment was 100 mm. in one rabbit and 50 mm. in another, and in each there was a rise of 35 mm. after stimulation, the change should be recorded as 35 per cent. for the first rabbit and 70 per cent. for the second. He found that sciatic stimulation in the as yet normal animal, caused a rise of 28 per cent., but after removal of the cerebral hemispheres a stimulus of equal intensity caused a rise of 47 per cent. Other experiments were done on animals whose intestines had been painted with nitric acid or otherwise treated to produce and give other symptoms of shock. In these animals it was found that percentile fall of blood pressure during shock was little if any less than that obtained before shock appeared when the central end of the depressor nerve was stimulated. He finds further that impulses produced by the stimulation of afferent nerve trunks are able to cause no more than momentary change in the general blood pressure upon which the preservation of the vital functions depends. Apparently there is an excess of strength, a provision that is wasteful, since the fate against which it is created does not enter the ordinary life. It was determined that the absolute change in the blood pressure on stimulation of afferent nerves was about the same so long as the blood pressure at the beginning of the stimulation was not less than 55 mm. Below that point the absolute change slowly diminished. The relative or percentile change, which is the true index of the condition of the vasomotor cells, increases as the blood pressure falls.

The apparent depression of the nervous system seen in clinical shock has given favor to the idea that low pressure is due to exhaustion of the vasomotor center. It must be understood that the brain is not an organ but a region of cells of various functions and no sweeping statements in regard to the separate nerve organs are permissible. Exception is taken to the interpretation put by Crile on some of his experiments on dogs. In these the blood pressure before experimenting averaged 132 mm., while after shock was present averaged 57 mm. and the percentile rise after sciatic stimulation showed clearly that the vasomotor centers were still active.

Meltzer believes that in the diagnosis of traumatic, as well as surgical shock, it is necessary to take into consideration the general mental state, the states of sensibility and motility, and the conditions of the cardiac, vascular and respiratory function. Recent experiments on blood pressure in shock have obscured the issue, as this is not the only symptom of shock. Injuries producing shock do so by favoring the inhibitory side of all the functions of the body, affecting first those functions of less importance, and with increasing injury spreading to the vital, and therefore better protected functions of the nervous system. His theory does not reduce the function to a single principle, to inhibition alone; it assumes that the injuries disturb the equilibrium between the excitors and inhibitors, shifting the tendency toward inhibition. Stimulation of nerve fibres, which usually cause excitation, will still cite, and inhibitory fibres will inhibit, probably better than normal. The insufficient activity of several functions due to the preponderating inhibitory influence, refers only to

the primary effect, because later these poorly acting functions become detrimental to the others, and anemia, asphyxia, or even fatigue might become operative during shock.

He found that there was an immediate cessation of motility of the viscera of rabbits on opening the abdomen, which had previously been observed as actively motile through the shaved belly wall. Pain was not the cause of this stopping, for with the cord divided at the upper dorsal segment the movements still stopped on opening the cavity. The entrance of air or the effect of cold was not the cause, as the dissection of the skin alone, or stimulation of any sort, caused the stoppage. After total destruction of the spinal cord peristalsis continued, and was better after dissecting the skin from belly, showing that exhaustion played no part. As in all functional activity of the body there are accelerators and inhibitors, so in the gastrointestinal canal the vagus is the motor and the splanchnic and some hypogastric nerves are inhibitory, and cutting of the splanchnic causes an increase of peristalsis. Normally there is never an absence of stimuli, producing tonus, but with an increase of peripheral irritation, like dissection of the skin over the belly, reflex irritation acts through the splanchnic and stops peristalsis. With the cord destroyed no reflexes are possible and normal peristalsis becomes greater. With pain sense as with motility it is found that a wide opening of the abdomen is followed by immediate cessation, like the sudden opening of a door which throws a hush on the lively company within. With this loss of intestinal sensibility there is a distinct reduction of skin sensitiveness over the entire body. In many of the large strong dogs after laparotomy and handling of the intestines, blood pressure, pulse and respiration would remain normal many hours; in fact the animals would have to be killed without showing any evidence of the so-called vascular shock. Other dogs, after 2 or 3 hours, showed some degree of general apathy, insensibility and motor relaxation, with blood pressure to 60 or 50 mm. and pulse 180, respiration irregular, but they would eventually recover. A third group of weak, poorly nourished dogs, would immediately present symptoms of deep shock, no stimulation would bring out any reaction, although the blood pressure was still 70 or 60 mm.

Henderson believes that the tachycardia in shock is due to acapnia, which is the lack of CO_2 in the blood, a condition which was first described by Mosso as existing in mountain climbers due to the rapid escape of CO_2 from the lungs at high altitude. He found he could increase or decrease the rate of heart beat by increasing or decreasing the pulmonary ventilation. He also made blood-gas analyses and found in dogs under anesthesia, that with a decrease of CO_2 in the blood there was an increase in the pulse rate, while the variation of the oxygen content of the blood was very small, when the pulse was at 75 the CO_2 was 39 vol. per cent.; when the pulse was 230 the CO_2 was 7 vol. per cent. Similar results were also obtained when the acapnia was induced by hyperpnoea resulting from vigorous stimulation of an afferent nerve, such as crushing the sciatic. In man forcing himself to breath rapidly and deeply for a few minutes the pulse increased from 65 to 100. When he holds a paper bag over his mouth, each time inspiring some of the expired air, the pulse is markedly slowed, sometimes as much as 10 or 15 beats. If respiration is forced, when using the paper bag, the increase of pulse rate is relatively small. He found also a diminishing blood pressure with the increase of heart beat.

Buerger and Churchman experimented in Breslau on the rôle of the celiac and mesenteric plexuses in abdominal shock, induced by the ex-

periment of Goltz, who showed that it was possible to produce stoppage of the heart action in a frog by mechanical irritation of the abdominal viscera. They found that the coeliac and mesenteric ganglia were not essential to life in dogs, and their removal was neither attended by evidences of shock nor followed by constant physiologic disturbances. The disturbances, such as a frequent diarrhoea, were too variable to warrant any general conclusions as to the physiology of the ganglia. They found that galvanic and faradic stimulation of these ganglia does not alone suffice to produce a condition of abdominal shock. In animals in which a peritonitis had been produced by turpentine, electrical stimulation of the ganglia was followed by marked shock in most instances, death coming either during the experiment or shortly afterwards. They leaned to the view that stimulation of the ganglia was in some way responsible for the palsy of the higher centers in the medulla, and that a similar mechanism may account for the condition of abdominal collapse clinically observed in peritonitis where the centers are poisoned by the absorbed toxins.

Walton in outlining the treatment of shock divides it into the preventive,—which brings the patient to operation in the best condition, and during the operation causes the least insult from rough tissue handling, loss of blood, or even intoxication with the anesthetic. (Ether is recommended.) Of the curative measures usually unintelligently employed, he advises most strongly against the use of strychnine and brandy. Ergot hypodermatically gives a constriction of the vessels for about 20 minutes. Infusion into the vein of salt solution with 1 to 160,000 of adrenalin, is most efficacious, but can be overdone, and the effect lasts but a few minutes, so that the injection has to be continuous. The best method of administering suprarenal extract is by continuous rectal injection of salt solution with a drachm of the extract to a pint of solution, of a temperature between 108° and 112° F., flowing at the rate of a pint an hour. He claims that the adrenalin is absorbed unaltered and is efficacious. He makes no mention of direct transfusion of blood.

FLEXNER'S SERUM IN THE TREATMENT OF EPIDEMIC CEREBROSPINAL MENINGITIS.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. AN ANALYSIS OF 400 CASES OF EPIDEMIC CEREBROSPINAL MENINGITIS TREATED WITH ANTIMENINGITIS SERUM.—Flexner and Jobling (*Archives of Ped.*, October, 1908).
2. SERUM TREATMENT OF MENINGOCOCCIC MENINGITIS BASED ON A SERIES OF FORTY CONSECUTIVE CASES.—Dunn (*Ibid.*).
3. SERUM TREATMENT OF MENINGOCOCCIC MENINGITIS.—Churchill (*Ibid.*).
4. SUMMARY OF CASES TREATED WITH FLEXNER'S SERUM.—Knox and Sladen (*Ibid.*).
5. CEREBROSPINAL MENINGITIS.—Miller and Barber (*Jour. A. M. A.*, June 13, 1908).
6. SERUM TREATMENT OF CEREBROSPINAL MENINGITIS.—Koplik (*Medical Record*, October 3, 1908).
7. EPIDEMIC CEREBROSPINAL MENINGITIS.—Chase and Hunt (*Archives of Internal Medicine*).

While it must, of course, be admitted that the last word has not been spoken as yet, with reference to the absolute value of Flexner's serum treatment of epidemic cerebrospinal meningitis, it is unquestionably true that the serum is of very distinct value in lowering the mortality rate of a most dreadful disease. The very recent publication of the papers read at the last meeting of the American Pediatric Society, when Flexner himself made a summarized report of the cases treated, is most opportune. The advent of the colder season with its probable increase in meningitic morbidity, makes the subject at this juncture all the more timely.

Flexner's own presentation of his summary, his attitude toward his discovery as evinced by his discussion, is a model of scientific clearness and of objective criticism. A careful reading of his original paper is warmly recommended to those interested in the subject.

In the 400 reported cases, a bacteriologic diagnosis was made in every instance. Excluding the cases which did not live 24 hours after the first injection of the serum (seven in number, either moribund or fulminant), there were 393 cases treated with the serum. There were 295 recoveries (75 per cent.) and 98 deaths (25 per cent.). [A rate much lower than has ever been obtained heretofore by any other method of treatment.—ED.] In general terms, the results were better the younger the patients and the earlier the treatment was begun. Patients under one year of age did not do so well, however. According to the time of first injection with reference to the duration of the disease, 361 cases were analyzed.

In cases where treatment was begun on the 1-3 day of injection, mortality was 16.5 per cent.; 4-7 day of injection, mortality was 23.8 per cent.; later than 7th day of injection, mortality was 35 per cent.

The beneficial results of early injection would thus seem sufficiently obvious. But, to quote the author, "so long as the diplococcus is still present in the meningeal exudate, and mechanical damage to the anatomical structure is not irreparable, the employment of the serum holds out hope of considerable benefit."

Of 273 cases which could be analyzed, 200 terminated by lysis, and 73 by crisis.

With reference to duration of disease under serum treatment, it may be noted that in 228 recovered cases, the average duration of active symptoms was eleven days.

Influence on diplococci, spinal exudate and leucocytosis. Very soon after the serum injections, the diplococci tend to become wholly intracellular. They soon also present certain changes in appearance, such as swelling and fragmentation. They stain diffusely and indistinctly and coincidentally tend to lose their viability in culture. The exudate loses pus cells rapidly; indeed, some cases, with distinctly purulent exudate, have recovered under serum treatment. Correlate with the disappearance of the diplococci and the clearing of the exudate, the general leucocytosis diminishes rapidly. The reverse of this phenomena is noted in cases not responding to the serum or responding imperfectly. The general statement can be made, that progressive increase in the turbidity of the exudate, rise in leucocytosis, and greater persistence of diplococci with retention of vitality after several serum injections, are unfavorable symptoms. Speaking generally, also, it may be said that relapses are ushered in by increased exudate, leucocytosis, and reappearance of diplococci though they may not regain the power to grow *in vitro*. Relapses were not very frequent in the series. They are not apt to be fatal if the serum is pushed.

In most cases, recovery, if it ensue, is perfect. Very few permanent complications were noted. [This is also in contrast to recovery in meningitis without serum treatment where physical or mental defects are almost the rule.—ED.]. The only persistent defect noted was deafness and, more often than not, it was noted early before the injections were begun.

Dunn, who reported 40 cases, serum treated, had 31 recoveries (77.5 per cent.) and 9 deaths (22.5 per cent.); of the 31 recoveries, only two showed permanent defect, one deafness, and the other deafness and blindness. Comparing this mortality with the mortality of other years, without serum treatment, Dunn finds that at the Children's Hospital in Boston, the mortality before serum treatment had varied from 58 to 80 per cent. of all cases. Of these 9 fatal cases, five were seen very late (thus emphasizing the necessity for the early use of the serum). The three principal (clinical) effects of the injections that Dunn found were, (1) fall of temperature, (2) improvement in the patient's general condition, (3) cutting short of the duration of the disease. Dunn believes that the serum, if it be at all active in a given case, causes a cessation of the active process, the resulting course of the disease depending mainly on the extent of tissue damage already done.

Churchill reports 9 cases, serum treated, with 7 recoveries (70 per cent.) all without serious sequelæ. He calls particular attention to the change in the patient's mentality following the injections. The patients are brighter and more rational. It is not uncommon to see a patient lying with head markedly retracted yet perfectly conscious and without pain. The writer of this review noted a similar finding in a case treated with the serum where the rigidity persisted after the mentality had cleared considerably. Churchill advises lumbar puncture in suspicious

cases, with immediate serum injection if the spinal fluid be cloudy, without waiting for bacteriologic tests. If these confirm the diagnosis, the injection is to be repeated within 24 hours.

Miller and Barber report an epidemic in Porterville, Cal. In 12 cases, the serum was not used and only one recovered, a mortality of 91.6 per cent. Four were given serum. Three recovered and the fourth was recovering but the supply of serum was exhausted and death ensued.

Chase and Hunt report 12 cases treated with serum at the Akron City Hospital. Of these 9 recovered, three died (mortality of 25 per cent.). Of 10 patients outside the hospital during the same epidemic, who did *not* receive the serum, one recovered and 9 died (mortality of 90 per cent.). The hospital cases were all very severe, and one of the two fatal cases was moribund when the first injection was given.

Knox and Sladen report the cases treated with serum at Johns Hopkins Hospital for the year ending in May, 1908. Of 21 cases, 18 recovered, 3 died (mortality 14 per cent.). Of 12 cases under 12 years of age, only 1 died (mortality of 8 per cent.). They note the same general improvement in patients' condition, subjective and objective, referred to by other observers. They note particularly that pressure symptoms seemed relieved by the serum injections even though the fluid withdrawn from the cerebrospinal canal was replaced by a greater volume of serum. These authors found the polymorphonuclear leucocytes increased in the spinal fluid after the first injection in all cases (chemiotaxis). This positive chemiotaxis and the promoted phagocytosis they found to be constant. They believe that the serum is both antitoxic and bactericidal.

In the discussion which followed Flexner's report, Koplik called special attention to the variability of the disease in its sporadic and epidemic form, the sporadic cases being as a rule milder than the epidemic. Of 13 cases treated with the serum, 2 died, both being less than 1 year of age. He holds that the Flexner serum is certainly a factor to be reckoned with in the treatment of cerebrospinal meningitis.

Holt presented statistics of the 1904 epidemic in New York. Of 2350 cases, all treated without serum, the mortality was 75 per cent. Of 350 cases with known duration, without serum, 50 per cent. lasted 5 weeks or longer, a striking showing in comparison with Flexner's records. In epidemic years every meningitis patient under 1 year, in Holt's hospital service, died.

Closing the discussion, Flexner showed reports from an epidemic at Belfast, Ireland. Outside the hospital, cases treated without serum showed a mortality of 80 per cent. as contrasted with 26 per cent. mortality in hospital where the serum was used.

The serum itself is bacteriolytic. It does not produce in test animals neutralization of the toxin according to the law of multiples, as do diphtheric and tetanic sera. The guinea pig can be protected up to a certain amount only. In the use of a serum of this class, results depend to a considerable degree on the concentration. The antibody should, therefore be present in a certain concentration. Flexner believes that the success of the serum has been due to the fact that a bacteriolytic and somewhat antitoxic substance is brought into direct contact with the focus of the disease. The poison of the diplococcus is largely a local one, acting chiefly on the nervous system. Hence the endeavor to bring the curative agent in direct contact with the focus of the disease which is a slight departure, as Flexner observes, from the general notion of the manner in which infectious processes are influenced by curative sera.

GENERAL SYPHILIS IN THE RABBIT. OPSONINS.

A REVIEW OF RECENT LITERATURE.

By CARL FISCH, M. D.

1. CLINICAL PICTURE OF GENERAL SYPHILIS IN A RABBIT.—Grouven (*Deutsch. Medicin. Woch.*, 1908, No. 38).
2. THE PRACTICAL SIGNIFICANCE OF OPSONINS.—Jürgens (*Deutsch. Med. Woch.*, 1908, No. 38, V. 15, p. 1648).
3. THE PRACTICAL SIGNIFICANCE OF OPSONINS.—Neuberg (*Deutsch. Klin. Woch.*, 1908, No. 25).

(1). The susceptibility of the rabbit to the infection with spirochaete pallida has so far been found to be limited to the corneal and to intraocular inoculation of the eye. The observations of Siegel on other lesions of secondary character are doubtful as to etiology. The absence of a general immunity by the inoculation of one eye, that was not inoculated, after the recovery of the other from the specific process, did not point to a generalized infection, but only to a local reaction analogous to another corneal and intraocular infection by the virus of variola and vaccinia, where one lesion on the cornea produces no immunity of the other and of the whole organism, especially not of the skin. That syphilis can become a general infection in the rabbit, in appearance very similar to the process in human syphilis, is proved by the recent observation of Grouven. In a rabbit that developed a typical secondary papule of the prepuce fourteen and one-fourth months after an intraocular inoculation, the character of the papule was established, clinically, histologically and by the presence of spirochaete pallida. After a month a large and rapidly developing tumor-like mass arose, that histologically, proved to be syphilitic and contained only spirochaete, and in a short time, dyspnoea and general debility set in, with very typical symptoms of general syphilis. The nasal openings were almost closed by crusts; after the removal of these crusts a red, partly eroded, mucosa appeared, containing immense numbers of spirochaete pallida. At the same time there appeared an extensive papulo-pustulous exanthema on the skin of the back, partly serpiginous in character, ulcerating and with crusts like those in rupia. In sections and smears, spirochaete pallida was demonstrated. The inoculated eye, that had after infection returned to a nearly normal condition, showed again pronounced and destructive keratitic changes. The conjunctival secretion contained numerous spirochaetae. Later, a fresh infiltrate, containing the same organisms in great numbers, was observed on the prepuce. A few days later the animal died in extreme exhaustion and emaciation, and the autopsy revealed the following conditions: The right middle lobe of the lung was totally hepatized and appeared grayish white. The right testicle and epididymis were enormously enlarged, partly necrotic, and showed on the surface numerous tubercle-like nodules. In the pelvis, an enlarged lymphatic gland, caseous in the center, was found. The internal organs showed no changes macroscopically; microscopically, the search for spirochaete was negative

in smears from lung, liver and spleen. The sections were positive in the testicle, epididymis, in the lymphatic glands, in all of the papules and other cutaneous lesions, and in the kidneys. The findings in lung and liver were doubtful. The cornea also gave a positive result. The course of the disease is analogous to the human disease, combining in it primary, secondary and tertiary lesions. There was, clinically, no possible doubt of the etiology of the disease. The correctness of this diagnosis was decisively evidenced by the inoculation of material from some of the papules into two monkeys, both of which developed typical specific lesions with the presence of *spirochaete pallida*. The observation is so important that the detailed reporting of it is justified.

The uncertainty whether the pneumonic process in the right lung was syphilitic is fully appreciated by the reviewer. In a case of secondary syphilis of early date, that came to autopsy after a lobar pneumonia, which was clinically atypic, the whole left lung was found completely consolidated, of grayish white color and very firm. The appearance was so typically that of an ordinary croupous pneumonia, that little attention was paid to it. My attention was called to the real condition by the absolute absence of any form of bacteria in the smears made from the surface of the cut section. A staining after Giemsa revealed few *spirochaetae* but showed a great number of formations that, from their staining and often from their shape, could be suspected as being fragments of this organism. The Levaditi specimens proved this suspicion to be justified, although after the ordinary stains not a single bacterium could be found; and only the extremely fibrous and infiltrated condition of the alveolar walls, and the characteristic vascular and bronchial lesions, showed that syphilis was present. The Levaditi specimens showed numerous *spirochaetae* in the thickened pleura and in the septa down to the alveolar walls. The walls of the bronchial structures were positive. The alveolar contents consisted mostly of large mononuclear cells, that, almost uniformly, were filled with a mass of minute irregular bodies silver stained. A close study of this material revealed, in the first place, in some of the cells, single, intact *spirochaetae*, and fragments that could with certainty be identified as broken *spirochaetae*. The change from these fragments to the smaller particles can be followed up in many of the cells, so that the conclusion that this picture is the phagocytic work of the exudate cells must be made. In combination with the typical *spirochaetae* in the connective tissue and the process of fragmentation of the organisms in the exudate, we see only what can well be studied in the frequent syphilitic abscesslike gummatous formations of the lungs of macerated fetuses, where, in different strata of the liquifying tissue, all the stages, from the intact *spirochaetae* just taken up by a mononuclear, and sometimes also by polynuclear, cells, to the fragmentation, can be seen and finally result in the minute granules, often retaining the arrangement in the typical turns. The condition here is identical with that found in Grouven's case of a rabbit pneumonia and the case of secondary syphilis mentioned here. In congenital syphilis the cells appearing in the liquifying gummatous lesions do the same, as the exuded cells in the infiltrated alveoli of the lung. In both cases the pneumonic process was syphilitic, a typical lobar pneumonia due to *spirochaete pallida*.

(2). The work and consequently the literature on Wright's opsonin theory, for the last two years enthusiastically emphasizing the importance of this so-called revolutionary discovery, has gradually dwindled down to single reports of observations in this line, made by

observers who took the works of Wright as the expression of an established fact. Voices raised against this certainty of the conclusions drawn, were heard but not appreciated. It is, therefore, a refreshing experience to see that the latest publications and discussions on opsonins are being directed in the critical trend of thought that was entertained by observant thinkers and exact workers from the beginning of the enthusiasm. The intuitive objection to the teachings of Wright was undoubtedly against the method used for the determination of facts and the estimation of their practical value. In work on opsonins it is absolutely impossible objectively to make definite conclusions. The material presented and from which conclusions are drawn, is unavoidably subjective in character and completely dependent on the personal equation of the observer. It is possible, with the method of Wright, to obtain, after long experience and trial, comparable findings so far as the single investigator is concerned; but a general standard as to method, is impossible after Wright's procedure. Simon has tried to alterate this subjectivity by another arrangement that assures a seemingly higher uniformity of the results on account of its greater simplicity; but the subjectivity remains about the same. The almost uniform opinion is to-day that the method is not exact, and cannot be considered as a basis for theoretic problems. As to diagnostic and prognostic importance, the variations from the so-called opsonic index are so slight that they fall, very often, within the range of the so-called normal index that is considered as the basis, but varies in the most healthy individuals, in man and animals, within the limits that occur in diseased conditions. It is a fact that in the most healthy individual the opsonic index varies constantly and that such a thing as a normal index does not exist. Jürgens especially insists that even with a routine, established after long practice, the method cannot permit of conclusions as to the course of the disease. It is not clear how the clinical experiences reported by Wright and many others can be taken as proofs of the truth of his explanation. Its main point lies in the adaptation, in time and quantity of the various injections, to the course of the opsonic curve. This point is made a priori futile by the fact that the effect of any injection can only be determined by the opsonic curve a shorter or longer time after the administration. The injections themselves, therefore, more or less, are given in observing the clinical condition of the patient, that is, they are arbitrary. Although, should Wright's theory be correct, which is not proved so far, the clinical results that he and others have obtained by following his directions, cannot be doubted, there is no proof that a change in the opsonic curve has anything to do with the improvement.

The general, easily accepted, assertion that the beneficial effect of the treatment with killed bacteria of the individual case, is due to the opsonic changes, meaning the increased opsonic index producing it, is the great mistake that has caused the late enthusiasm for it. In fact, the two things, the opsonic index and the bacterial injection, have only a general biologic reaction to each other; and, in the first place, there is no proof whatever that the action of opsonins, the stimulation of phagocytosis of the white blood cells, is a real factor in establishing immunity, or a simple stimulation to scavenger work. It would be going too far to say anything in extenso on the views that are entertained to-day about the meaning of phagocytosis to the infected organism. It would lead to the discussion of direct action on the microorganisms, simple mechanical removal of inert and, only by its presence, irritating material, or by the possibility of the removal by this process of the disintegrating

products; the endotoxins, derived from disintegration after death of bacteria through bactericidal substances. For the latter possibility the work of Buxton has furnished much very suggestive and original material. All these problems are to-day unsolved; the interpretation by a procedure that, in its nature, is not controllable, will not justify its being pronounced the solution of these obscure riddles. The point is, that the opsonic treatment has absolutely nothing to do with the clinical results by the injection of homologous bacteria. The fact that the individual bacteria are the most apt to be used as immunizing material in chronic infections, was well known before Wright made his views public. This was known long before we knew of opsonins, and extensive investigations were made in this direction; for instance, for the individual tubercle bacilli. There is nothing new in the use of bacterial injections. The only merit of Wright's work is, that he has called attention to this method as being full of hopeful prospects. But the method is not based on opsonins, but on factors established by work that in its character has led to absolute, as far as we can use this word, exactness of the establishment of the relation of the interesting factors in these processes. The correctness of these statements can be easily shown in almost mathematical precision while, to use Jürgens' word, for the opsonins the time of theoretic discussion has not come yet. Uhlenhuth calls everything done so far in this line only a preliminary, orientating experiment.

DIAGNOSTIC AND THERAPEUTIC NOTES.

SULFAS CHININI IN MORBUS BASEDOWII.—Twenty years ago Paulesca (*Journal de Médecine interne*, p. 284, 1898) advised large doses of sulphate of quinine in the treatment of Graves' disease, and claimed to have obtained better results with this treatment than with any other. However, only a few physicians followed his advice and nothing has been heard of this treatment for several years. In the *Bulletin* of the Académie de médecine, 25 fevr. 1908, Lancereaux reports a series of over 20 cases of Basedow's disease treated according to Paulesca's advice. In every case more or less good results were obtained. He advises that the quinine be given for a long time, and has his patients take 2 to 3 doses, of 500 mgr. sulfas chinini each, during supper, at intervals of one-fourth of an hour. All the symptoms of the disease disappeared gradually, the struma last of all. In a few cases a return of the symptoms occurred after the treatment was discontinued. Lancereaux thinks that a contraction of the blood-vessels of the head is produced by the continuous use of the quinine and that the dilatation of the vessels in Basedow's disease is relieved in this way.

URTICARIA SYMPTOMATICA INFANTALIS, also called lichen urticarus, or urticaria papulosa, may be caused by parasites (pulex, cimex, etc.); by dentitio (reflex), by autointoxication from various organs (thyroid), while anemia, rachitis, etc., predispose the patient to this troublesome disease. Sometimes no cause can be discovered and the disease is then catalogued under the neuroses; in other cases it is followed by a typical prurigo of Hebra. Scharff (*Therap. Monatshefte*, Nov. 10, 1907) treats these cases with ichthyol internally and externally, not forgetting to diet the patients, and speaks highly of his good results with this treatment. He gives 10 drops of a 10% solution of ichthyol three times a day to a baby under one year; 10 drops of a 30% solution three times a day to a child of three years, and 5 drops of a 50% solution three times a day to a child of six years and over. Externally a lotion of the following combination is applied twice daily, followed by an amylum dusting powder: Ichthyol, 5.0; Glycerin, 5.0; Aqua dest., ad. 100.0. Or an ointment as follows: Ichthyol, 10.0; Adipis lanal, 20.0; Vaseline flav., 40.0; Aqua dest. 100.0. Any disturbance in the gastro-intestinal tract should be looked after.

SPECIFIC TREATMENT OF TUBERCULOSIS PULMONUM.—Ritter (*Deutsch. med. Wochenschrift*, 1908, No. 29), Superintendent of the Sanitarium of Hamburg, has been treating his patients without tuberculin during the years 1899-1903, while tuberculin has been used during the last five years. He is very much pleased with a careful tuberculin treatment. Best results are obtained in patients without fever in the first and second stage of the disease, who have sufficient resistance, but also in the third stage marked results may be seen. His favorable opinion of the tuberculin

treatment is based on the *historiæ morbi* given in his article, and in the marked increase of improved and discharged patients during the last five years. No danger is attached to the tuberculin treatment, if carried out under the necessary precautions. The treatment should last at least three to four months and should not be neglected in any sanitarium. In private practice, however, this treatment meets with too many difficulties to be used.

SURGICAL TREATMENT OF SCIATICA.—Alfred Pers (*Deutsch. med. Wochenschrift*, 1908, No. 29), in 1906, published the technic of an operation for chronic ischias in which adhesions of the nerve were loosened. Since then 42 patients have been operated by him for this trouble, of whom 40 were cured by the operation while only two had a recurrence. The adhesions are most often found along the femur, but have also been found near the foramen ischiadicum. In the latter cases, an incision in the gluteus magnus was necessary. The neurolysis is the only method that gives constantly good results in ischias of long standing.

TREATMENT OF ACUTE RHINITIS.—H. Löwy (*Münch. med. Wochenschr.*, 1908, No. 29) advises the following treatment in combination with the ordinary measures: Profuse perspiration, nasal respiration, etc. His best results were obtained in acute cases, and in cases of several weeks' standing. A swab of absorbent cotton, soaked in a 10% solution of protargol, is placed against the anterior part of the middle concha and left in place for a few minutes. The application is made on both sides, once or twice daily. In case the patient has to do the treatment himself, a 2 to 5% protargol solution is dropped in each nasal cavity twice daily. Inhalation for 5 to 10 minutes, 2 or 3 times daily, of a few drops of a mixture of menthol 4.0 and camphor 2.0 in a test tube with hot water, helps the cure a great deal and gives the patient much relief.

SYPHILIS THERAPY IN CHILDREN.—A. Eysell (*Münch. mediz. Wochenschr.*, 1908, No. 24) treats the coryza, in children suffering from hereditary lues, by blowing 100 mgr. of a mixture of equal parts of calomel and sacchrum lactis into each nasal cavity. The symptoms disappear in a few days, while also the general condition improves greatly by continuing this treatment. The same good results were obtained in adults with mucous patches or ulcers in the nose or on the tonsils. In children older than ten years 0.1 to 0.3 calomel, mixed with 0.05 to 0.15 sacchrum lactis, was used three times daily. Deep inhalation brings part of the powder into the larynx and trachea. Luetic lesions in other parts of the system also disappeared under this treatment.

PROPHYLAXIS IN ACUTE OTITIS MEDIA.—H. Obermüller (*Münch. med. Wochenschr.*, 1908, No. 24) has been using the following treatment—first suggested by Kessel—with happy results for the last 15 years. In case the disease was not older than 24 to 48 hours, a cure was often accomplished in 24 hours. Drops of the following combination are dropped in the ear every hour: Extr. opii, 1.0; Glycerini Anhydrici, 10.0. An osmotic change takes place between exudate and glycerin and the opium penetrates into the middle ear; this is shown by the drowsiness of the little patient.

CORRESPONDENCE.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

Nothing in medicine is more remarkable than the history of the alterations in articulate speech, which have been called aphasia. One can say with truth that the point of departure from the normal, was first described according to the inexact and puerile conception of the German phrenologist Gall, who arrived at conclusions in regard to intellectual tendencies in man and even in animals from the exterior configuration of their crania. He placed, without any scientific reasons, "the seat of articulate speech" in the orbital region of the frontal lobes. But though this conception was erroneous, it had happy and unforeseen consequences, in so far as it served as a basis for the doctrine of cerebral localizations.

The French surgeon, P. Broca, published on April 18th, 1861, in the *Bulletin of the Anthropological Society*, the results of an autopsy on one Leborgne, who, in life, had lost the faculty of articulating words well, though his tongue was not paralyzed, his intelligence not disturbed, and who apparently comprehended things that were said in his presence. At the autopsy Broca found in the left cerebral hemisphere an extensive area of softening occupying the third frontal convolution, which was prolonged into the parietotemporal region. At that time it was believed that the softening was a progressive affection, developing centrifugally, and that the central part of the lesion, in Leborgne's case, corresponded in reality to the left third frontal convolution; in other words, the convolution of speech,—or, as it was named by Broca, the convolution of Broca. Strange to relate, Leborgne's brain, which is conserved at the Dupuytren Museum, was never dissected; therefore the contradictory statements in regard to autopsies, published at the time, should not attract attention, though there must have been great enthusiasm on account of the new doctrine.

But the subject of aphasia, as it was then conceived to be, was ere long the object of conflicting investigations. Here it would be well for us to remember the distinction made by Wernicke, between sensory aphasia, the seat of which he placed in the left temporal region, and motor aphasia, due to a lesion of Broca's gyrus. Kussmaul followed with a division of sensory aphasia into two new forms: word-deafness and word-blindness, which two, with motor aphasia and agraphia, constitute the four varieties that the teachings of Charcot have rendered classic. But it was not long before one recognized that these typical cases rested on theoretic ideas; that they were the outcome of philosophic ideas, and did not agree with clinical facts. Who does not remember the eighteen varieties of aphasia based on many hypotheses—cortical, subcortical, transcortical, and others.

To M. Pierre Marie belongs the honor of having declared that there is at present a necessity to revise our former ideas of aphasia, by introducing anatomo-clinical researches in opposition to the ancient doctrine which was too exclusively philosophical and abstract. Let us at least examine the fundamental ideas of Pierre Marie's doctrine. The first

thing to do is to localize articulate speech elsewhere than in the convolution of Broca. For there exist convincing reasons that the third frontal lobe can be destroyed without producing aphasia, and there are cases, not less convincing, of aphasia without any alteration in the convolution of Broca. What is then the cerebral localization of aphasia? Certain facts observed by M. Marie have led him to the following conclusions: Each time that one can diagnose, during the life of the invalid, a pure motor aphasia of the subcortical type, or anarthria, one encounters in the brain at autopsy a softening or a hemorrhage in the lenticular zone. Each time that the invalid presents the ensemble of the characteristic signs of Broca's aphasia, one observes in the cerebral hemisphere a double area: one area situated in the lenticular zone, the other in Wernicke's zone or in the fibres which issue from it. Broca's aphasia consists then, at the same time, of Wernicke's aphasia in addition to pure motor anarthria, or to anarthria itself; the former distinction between endocortical motor aphasias and subcortical aphasias no longer obtaining in reality.

Thus we see that aphasia presents two clinical types, Wernicke's aphasia (absence of anarthria) and Broca's aphasia (with anarthria). In both cases the aphasic syndrome is identical, but in the second there should be superadded the syndrome of anarthria. Moreover, in all aphasiacs all the modes of speech are more or less affected and there exist, in divers degrees, word-deafness, word-blindness and agraphia. Finally, with aphasiacs there exists a diminution in the intelligence, which is more or less accentuated in its effects on the memory, on the association of ideas, and on attention.

Thus after a rigorous revision of the question, the study of aphasia has at last been scientifically described, for all researches have resolved themselves into these fundamental ideas: The third frontal convolution is not the center of speech; this is located in Wernicke's zone; and there also exists a center of verbal articulation occupying the lenticular zone, the destruction of which causes anarthria.

October 20th.

OBITER DICTA FROM FOREIGN JOURNALS.

MEDICAL DICHOTOMY.

The question of medical dichotomy—the division of fees—is not peculiar to any one country but has some significance in all. We are not in the position to state with authority how far the evil has spread in this country, but that it is with us, to a greater extent than it ought to be, statistics, if carefully gathered, would undoubtedly show. Dr. Louis Rénon in a lecture recently delivered at the Mercy Hospital (*l'hôpital de la Pitié*) at Paris, handles the subject without gloves; and that it should be riddled with scorn and contempt no right-minded critic will deny: The question of medical fees induces me to speak to you of another matter, very delicate, indeed, namely, dichotomy. I shall be very frank with you in my explanations, for it seems to me the height of folly to avoid a subject because, in certain quarters, it is regarded with the sort of apprehension which resolves itself into the feeling that to ignore an evil is the best way to stop it. According to Larousse, dichotomy is defined as follows: An understanding with the doctor called in consultation and the surgeon who operates, that the doctor who procures the patient gets his share of the fees. Dichotomy, then, as defined in the dictionaries, is unquestionably the result of conditions which are responsible for the medical crisis in the careers of all those doctors whose means of livelihood are fraught with great difficulties. And not only has dichotomy gradually spread into all ranks of medical practitioners, as would a canker, but the minutest details of a medical career are influenced by its nefarious teachings.

Dichotomy is to-day the gospel of surgeons, general practitioners, specialists, pharmacists, bandagers, herborists, and even of porters and waiters at hotels. This degradation of dichotomy has caused three important undesirable changes: the commercialization of medicine, the suppression of independence in medicine, and the debasement of medicine as a moral force in the eyes of the public. Needless to add, gentlemen, I am absolutely opposed to dichotomy, for the commercialization is so great that the doctor is nothing but a commission merchant. Independence on the part of a medical dichotomist is a farce; it has happened, in many cases, that he is prevailed upon to cast his vote for a surgical interference even when an operation is unnecessary. Moreover, to enjoy the favors resulting from this system, he consents to the operation being performed by an inferior surgeon, though fully aware that a more efficient one could do better work. His conscience has a laxity that allows it enough latitude to face any ordeal. As for his vacillations, the less said the better. In a word, dichotomy undermines all the best and highest qualities of the doctor.

Finally, dichotomy lowers, in the regard of the public, the moral status of the doctor. For not only is the matter mentioned in the dictionaries, but in certain guide books, specially prepared for strangers visiting Paris, there are blazoned forth the names of surgeons who divide their fees with the doctors.

Recently some of the leading journals have inveighed against dichotomy; in fact, have started a campaign against its many evils.

In the early part of January a well-known daily paper published a long article complimentary of the science of medicine, especially of surgery, as practiced in Switzerland where dichotomy is unknown; the author laying stress on the decided differences between an operation performed at Lausanne and one undertaken at Paris. In the June number of the *Revue des Deux-Monde*, Professor Charles Richet in his essay on *La médecine, les médecins et les Facultés de médecine* (Medicine, Doctors and Medical Faculties) says, in speaking of the evils accompanying dichotomy, that he denounces it because "both surgeon and physician are made less honorable by practicing it." These antagonistic views should give us heart, as only a few years back one of the most serious French newspapers, in its afternoon issue, printed an article in which dichotomy was lauded because it helped financially the so-called medical under-dog. But what is most unfortunate is the fact that the public to-day is fully aware of all the decided evils of the system; and its esteem and regard for the whole profession is waning, if not already nil.

Fortunately, both for the public and the practice of medicine, though the disgraceful procedure is at present in full swing, there are signs that it has reached its apogee. I should not be surprised if it soon fell into disrepute, and for this reason: the exigencies of the doctors are growing at so fearful a rate that the heretofore pleasant arrangement between surgeon and doctor can not obtain much longer. The latter has already increased his portion from 50 to 75 per cent. of the whole fee; and with our knowledge of human nature we should feel justified in saying that even the most enthusiastic surgical dichotomist will ere long rebel. Again the public, enlightened as to the true inwardness of dichotomy, is already giving signs of being mistrustful. Patients have been known to refuse to be operated by the surgeon selected by the physician. Except when an operation is imperative they consult many surgeons; they inquire if the operation is necessary; they inform themselves as to the ability and standing of a surgeon; and it is not unusual for a medical dichotomist to see his patients elude him, despite his supposedly strong hold on them. Many patients, thoroughly informed as to the inner workings of the system, prefer surgeons of great renown; and their reasons for consulting those who demand exorbitant sums for their work, were described by me in an article which I published in the *Journal des Practiciens*, March 7, 1908, in which a man of the world bitterly complained to me of the gross irregularities of many surgeons. When I protested against his severe strictures, and attempted to show him that the majority of French physicians and surgeons were honorable and conscientious men, devoted to the best interests of their profession, he replied: "You are right to uphold your confreres but as regards myself and my wife and children, we always consult the famous surgeon X, or the celebrated doctor Z. Of course this is most expensive, but the great advantage which I derive is that both surgeon and doctor being very busy men, there is absolutely no danger of their meeting in consultation, either to advise an operation or the prescribing of unnecessary drugs. Now don't tell me I am doing the medical profession an injustice because I am brutally candid in my remarks." Fortunately for medical men, this case is to-day not an isolated one; and as an indication of the trend of thought it illustrates what many would express had they the courage of their convictions. Let us hope that before long dichotomy will be relegated to the limbo that already contains many of the barnacles which the weaknesses of mankind have allowed to fasten on members of a profession which ought to stand for honor, integrity and probity.

HISTORICAL NOTES.

JOHN KEATS.

Students of heredity will look in vain for any support of their theories in the life of the poet who has been called "the apostle of pagan beauty." That good can come out of evil no one in these days of large ideas, as instanced in the teachings of universal brotherhood, will deny; but that the son of an ostler and of the daughter of the proprietor of livery-stables should be other than an ordinary man, must be taken as another instance of a mental manifestation that is too eccentric and too wayward to fit



John Keats

in with the correct and measured teachings which science applies to obscurities for the understanding of their presence. Now about the only ordinary thing the immortal author of the "Ode to a Nightingale" did—and even this can not be traced to his lowly ancestry—was his graduating in medicine and attempting to practice the art of surgery. By what mental twist on the part of the poet, or by whose advice he spent a long apprenticeship with a country doctor, then walked the London hospitals and, finally, graduated with honors at Apothecaries' Hall, no biography so far published enlightens us; but that he did all this is beyond a doubt, and perhaps, if he had not opened the temporal artery ac-

cientally during an operation, the world would have been poorer by a very good poet and somewhat richer by the addition of a second-class surgeon. But the temporal artery was responsible for his laying down the lancet and taking up the pen.

When we remember how short his life was—he died in his twenty-sixth year—we must admit that here we have another instance of mis-directed enthusiasm in channels foreign to the nature of the individual. And the fact that there was no father standing over him, with threats of expulsion from home should he refuse to accede to wishes emanating from a parental narrowness, or no friend driving him, by ill-directed advice, into an uncongenial occupation, compels us to admit that with the desire for poetry quite paramount in his mind, even before he began his medical apprenticeship, he nevertheless had a judgment made up of very poor stuff; otherwise he would not have spent, what must have been to him, many wearisome years cultivating the prosaic muse of medicine. And surely in 1815 when Keats passed his final examination and was appointed dresser at Guy's Hospital, surgery had none of the fascinations of to-day.

That the knowledge of medicine was a help to Keats, he admits in a letter to Reynolds, dated May 3, 1818, where he says "every department of knowledge we see is excellent and calculated towards a great whole. I am so convinced of this that I am glad at not having given away my medical books, which I shall again look over to keep alive the little I know thitherwards;" but he also adds in the same letter, "were I to study Physic, or rather Medicine again, I feel it would not make the least difference in my poetry." That the latter utterance was true, the most careful reading of his poems will not contradict. For of all English literary men, Keats stands out as the one whose genius was not sustained by any currents of thought in his environment, by heredity, or by influences derived from a bias in education. The only instance in his whole career when his knowledge of medicine was an influence—and an undesired one under the circumstances—was when he coughed up some blood, a scene most graphically described by his intimate friend, Charles Armitage Brown: "I entered his chamber as he leapt into bed. On entering the cold sheets, before his head was on the pillow, he slightly coughed, and I heard him say, 'That is blood from my mouth.' I went towards him; he was examining a single drop of blood upon the sheet. 'Bring me the candle, Brown, and let me see this blood.' After regarding it steadfastly, he looked up in my face with a calmness of countenance I can never forget, and said, 'I know the color of that blood—it is arterial blood—I cannot be deceived in that color—that drop of blood is my death-warrant—I must die.'" We wonder if the poet's medical temper, and those finer sensibilities peculiar to the tuberculous, were assuaged when, later on, Dr. Clarke took eight ounces of blood from his arm—it was black and thick—after he had vomited two cupfuls!

BOOK REVIEWS.

PULMONARY TUBERCULOSIS AND ALL COMPLICATIONS. By Sherman G. Bonney, M. D., Professor of Medicine, Denver and Gross College of Medicine, Denver. Octavo of 778 pages, with 189 original illustrations, including 20 in colors and 60 X Ray photographs. Philadelphia and London: W. B. Saunders Company, 1908. Cloth, \$7.00 net; half morocco, \$8.50 net.

In view of the world-wide and constantly increasing interest that is taken in the struggle against tuberculosis it is natural that the literature of the subject should be an enormous one, and inevitable that the busy practitioner should find it difficult to keep abreast with the movement. There is thus very decidedly a place for a practical book like that of Prof. Bonney's, which combines a critical summary of the newest views and discoveries with an adequate presentation of general clinical and therapeutic matters. Although the book is modestly entitled, "Pulmonary Tuberculosis," it really covers pretty well the entire field of activity of the human tubercle bacillus, infections of all the various organs being taken up in turn. The concluding chapters on specific therapy are of especial interest, the author's contributions in this field being of considerable value. His results on the whole agree with those of most observers in being decidedly encouraging. He uses as his tuberculin a bacillus emulsion and has obtained good results in all stages and varieties of tuberculosis. Where there is a mixed infection, however, he precedes the use of tuberculin by a course of injections of homologous vaccines. His attitude towards the opsonic index is respectful and hospitable, but in his own work he has found it more advantageous to trust to clinical observation. The two by no means always go hand in hand. The book could be made still more useful by means of a more extensive index.

THE ELEMENTS OF THE SCIENCE OF NUTRITION. By Graham Lusk, Ph. D., M. A., F. R. S. Illustrated. W. B. Saunders Co., Philadelphia and London.

This volume is devoted to a consideration of nutrition in health and disease and presents in splendid form a thorough knowledge of metabolism. Chapters are devoted to the feces, starvation, the regulation of the body temperature, influence of proteid food, the influence of fats and carbohydrates, the influence of mechanical work, fat requirements during the period of growth, metabolism in diabetes, fever, gout, etc. A valuable table is added, showing the cost of proteid and energy. The work all in all is an excellent one and can be heartily recommended.

LECTURES TO GENERAL PRACTITIONERS ON THE DISEASES OF THE STOMACH AND INTESTINES. By Boardman Reed, M. D. Illustrated. Second Edition. E. B. Treat & Co., New York, 1907.

This work was conceived by the author with a view of including within one volume a consideration of diseases of the stomach and intestines from the standpoint of our present knowledge. While there are many excellent works in English on the stomach and the intestines, up to the time this work was written, there was no book which included both under one cover. The author has endeavored to present the newer methods in the diagnosis and treatment of the digestive system in the smallest possible space and yet omit nothing. The first half of the work is devoted to anatomic, physiologic, chemic and diagnostic data, methods of examination and methods of treatment, while the latter part, entitled "The Gastro-Intestinal Clinic," is devoted to a consideration of special diseases of the gastro-intestinal tract. A large number of illustrations have been included and a number of excellent tables.

MANUAL OF DISEASES OF THE EAR, NOSE AND THROAT. By John Johnson Kyle, B. S., M. D. Second edition, revised and enlarged with 169 illustrations. P. Blakiston's Son & Co., Philadelphia. \$3.00.

Scarcely more than a year ago Kyle's 1st edition was reviewed in these columns. The appearance of a second edition in so short a time, in itself speaks for the popularity of this little work. In this edition the author has

added a chapter on tracheo-bronchoscopy, and has made a number of minor changes and additions which bring the work up to date. The efforts of the author in endeavoring to give to the student and general practitioner the essential information relative to the diseases of the ear, nose and throat, have deservedly been crowned with success.

TREATMENT OF INTERNAL DISEASES. For Physicians and Students. By Dr. Norbert Ortner, of the University of Vienna. Edited by Nathaniel Bowditch Potter, M. D., Visiting Physician to the New York City Hospital, to the French Hospital, and to the Hospital for Ruptured and Crippled; Instructor in Medicine, Columbia University. Translated by Frederic H. Bartlett, M. D., from the Fourth German Edition. J. B. Lippincott Company, Philadelphia and London.

This book is a translation of a revised fourth edition of Ortner's Lectures upon the Therapeutics of Internal Medicine. The author begins each chapter with a pathology and physiology of the disease under consideration. The noteworthy effort of basing the following treatment upon this groundwork places this book among the most commendable ones upon therapy yet published. The detailed manner in which he considers the treatment of each condition, first as a primary one, and then as a secondary complicating or sequel of other diseases, giving the indications and counter-indications of these conditions, depending upon their relative etiology, pathology, etc., of the particular clinical picture, is a marked diversion from the ordinary works on therapy. The whole work is an exhaustive study based to a large extent upon personal clinical observation. The importance of mechanical, dietetic, climatic hydrotherapeutic and other extra medicinal methods is emphasized throughout the volume. The applicability and the respective advantage, disadvantage and limitation of drugs has been brought up to date. The references in climatology hygiene and dietetics have been adapted to students and practitioners of this country. Numerous American sanatoriums for patients with tuberculosis, and American mineral waters have been tabulated and discussed. In recommending this work we believe that the author's endeavor to make medication less an affair of memory and more one of reason has been very successfully carried out.

THE BABY: ITS CARE AND DEVELOPMENT. By LeGrand Kerr, M. D., Professor of the Diseases of Children in the Brooklyn Post-Graduate Medical School. Albert T. Huntington, Brooklyn, New York, Publisher. 1908. Price, \$1.00.

This little volume is designed for the use of mothers. It is a practical work, written in simple language. The chronological arrangement of the chapters enables the mother to intelligently follow the development of the child. The book is well adapted for distribution by the physician to his patients.

HYGIENE OF THE LUNG IN HEALTH AND DISEASE. By Professor Dr. Leopold von Schrotter, Director of the Third Medical Clinic of the Vienna University. Translated by H. W. Armit, M. R. C. S., L. R. C. P., with sixteen illustrations. Rebman Limited, 129 Shaftbury avenue, W. C., London; Rebman Company, 1123 Broadway, New York.

This little book deals with the anatomy, physiology and hygiene and diseases of the entire respiratory tract. In simple uninvolved language its object is to instruct the lay person on the functions of the respiratory organs and to direct the attention towards their proper development as a means of preventing diseases of this system. It gives a very creditable hygienic treatment of respiratory diseases.

DIETS IN TUBERCULOSIS, PRINCIPLES AND ECONOMICS. By Noel Dean Bardswell, M. D., M. R. C. P., F. R. S. (Edin) Medical Superintendent King Edward VII. Sanatorium, and John Ellis Chapman, M. R. C. S., L. R. C. P., Medical Superintendent Coppin's Green Sanatorium. Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E. C., London. 1908.

The reintroduction of Boding's method of treatment of tuberculosis which has produced such happy results in the last few years has caused a demand for the special treatise which this book fulfills. It is an abstract of the proceedings of the Royal Society upon the various researches recorded in the diet of tuberculosis. It deals in detail with the various problems in all types and varieties of tubercular cases. The fuller realization of this exceedingly important factor in the treatment of tuberculosis should place this work in a very enviable position in its line.

PHARMACOLOGY, THE ACTIONS AND USES OF DRUGS. By Maurice Vejux Tyrode, M. D., Instructor of Pharmacology in the Medical School of Harvard University. P. Blakiston's Son & Company, 1012 Walnut street, Philadelphia. 1908.

The author's purpose to produce a small and concise text-book, giving the essential facts of pharmacology without profound scientific discussion of the same, has been established in this work. Known facts regarding the action of drugs have been emphasized, and vague and contradictory statements regarding the same have been rejected. The brief summary of the general action, and a short statement concerning the uses and applications with a concise description of the different preparations used in medicine, makes this text a very reliable and authentic guide for the busy student and the practitioner.

HEART DISEASE AND BLOOD PRESSURE. A Practical Consideration of Theory and Treatment. By Louis Faugeres Bishop, A. M., M. D., Clinical Professor of Heart and Circulatory Diseases, Fordham University, School of Medicine, New York City; Physician to the Lincoln Hospital; Late Chairman of the Section on Medicine of the New York Academy of Medicine; Member of the New York Pathological Society; the Neurological Society; Alumni Association, St. Luke's Hospital, etc. Second Edition. E. B. Treat & Company, 241-243 West 23d street, New York. Price \$1.00. 1907.

This little book is the second edition of the author's on the cardio-vascular system. It deals in detail upon the principles of blood-pressure with their consequent effects and results upon the heart and other organic systems of the body. The great value of a proper understanding of these general principles in cardio-vascular diseases especially should make this book an extremely interesting as well as most thoroughly instructive to a general profession.

TASCHENBUCH DER THERAPIE MIT BESONDERER BERUECKSICHTIGUNG DER THERAPIE DER BERLINER WIENER U. A. DEUTSCHEN KLINIKEN, herausgegeben von Dr. M. T. Schnirer, Redakteur der Klinisch-therapeutischen Wochenschrift. Vierte vermehrte und verbesserte Ausgabe. Wurzburg, A. Stuber's Verlag (C. Kabitzsch). 1908.

This compact little book is the treatment of diseases which the author has found especially commendable. Diseases arranged in alphabetical order are first considered by giving a summary of the symptoms, and then an outline of the drugs used including a number of prescriptions, which the author has found especially effective.

MEDICAL DIAGNOSIS, A MANUAL FOR STUDENTS AND PRACTITIONERS. By Charles Lyman Greene, M. D., Professor of the Theory and Practice of Medicine in the University of Minnesota; Attending Physician, St. Luke's Hospital, the City Hospital and the St. Paul Free Dispensary; Member of the Association of American Physicians, the American Medical Association, American Association for the Advancement of Science; Author of "The Examination for Life Insurance and Its Associated Clinical Methods," etc., Second Edition, Revised, with 7 colored plates and 241 illustrations. P. Blakiston's Son & Company, 1012 Walnut street, Philadelphia. 1907.

This is a small compend on diagnosis, fairly complete and accurate. Much of the text is a compilation which has not been brought up to date. Its conciseness and marginal index make it a very ready reference, but as an authentic treatise on diagnosis this book could bear a very careful revision.

LIFE INSURANCE AND GENERAL PRACTICE. By E. M. Brockbank, M. D. (Vict.) F. R. C. P., Honorary Assistant Physician, Royal Infirmary, Manchester, Lecturer in Materia Medica and Therapeutics, Victoria University of Manchester. Henry Frowde, Hodder and Stoughton, London.

This volume dealing with the question of life insurance examination as a part of general medical practice is valuable for two reasons; first, it gives the methods of making a thorough examination and eliciting important prognostic findings; and second, it contains a mass of very important statistics and references which are of value with the relative information obtained by examination, in developing prognostic ability.

KIEPE'S MATERIA MEDICA AND THERAPEUTICS. A Manual for Students and Physicians attending post-graduate courses. By Edward J. Kiepe, M. D. Lea Bros. & Co., Philadelphia and New York, 1906.

This small volume is an epitome of Materia Medica and Therapeutics intended for students of medicine. It is not intended as a complete text-book,

but a supplement to larger works. The contents are based upon the lectures of the author and present the important points in materia medica and therapeutics. At the end of each chapter are a series of questions covering the subject matter that has gone before.

HEART DISEASE AND THORACIC ANEURYSM. By F. J. Poynton, M. D., F. R. C. P., London, Assistant Physician to University College Hospital, and Physician to Out-patients, The Hospital for Sick Children, Great Ormond street, London, Late Medical Tutor and Medical Registrar to St. Mary's Hospital. Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E. C. London.

This small book is especially commendable for the accuracy of its clinical and pathological knowledge of diseases of the heart and large blood-vessels. It is finely illustrated with cuts consisting of the macro- and microscopic lesions pulse tracing, skiagrams, etc., found in almost every individual lesion. Clinical variations of these disease processes, and the adaptation of treatment to these special variations are among its many commendable points.

THE PRINCIPLES AND PRACTICE OF HYDROTHERAPY. A Guide to the Application of Water in Disease. For Students and Practitioners of Medicine. By Simon Baruch, M. D., Professor of Hydrotherapy in Columbia University (College of Physicians and Surgeons), New York; Medical Director of the Hydratric Department of the Riverside Association; Third Edition, revised and enlarged. With numerous illustrations. William Wood & Company, New York, 1908.

The present volume bears ample testimony to the superiority of methodical hydrotherapy over the slipshod, inexact mode of its application. It is intended as a guide to this form of treatment in private practice and general hospital. It is filled with very useful and practical technique, and gives a very concise discussion of the indications of hydrotherapy in all the different disease processes.

PHARMACOLOGY AND THERAPEUTICS. By Reynold Webb Wilcox, M. A., M. D., LL. D., Professor of Medicine at the New York Post-graduate Medical School and Hospital; Consulting Physician to the Nassau Hospital; Visiting Physician to St. Mark's Hospital; ex-president of the American Therapeutic Society; Fellow of the American Academy of Medicine; Member of the American Medical Association; Vice-Chairman of the Revision Committee of the United States Pharmacopeia; etc. Seventh Edition, Revised, with index of symptoms and diseases. P. Blakiston's Son & Company, 1012 Walnut street, Philadelphia.

This new edition of the above work is thoroughly revised and modernized. The author's views are so well recognized and established as to need no further comment.

THE EXAMINATION OF THE FUNCTION OF THE INTESTINES BY MEANS OF THE TEST DIET. ITS APPLICATION IN MEDICAL PRACTICE AND ITS DIAGNOSTIC AND THERAPEUTIC VALUE. By Prof. Dr. Adolph Schmidt. Authorized translation from the latest German Edition. By D. Aaron, M. D. F. A. Davis Company, Philadelphia.

This volume presents in a condensed form the results of the work of Schmidt and Strassburger upon the examination of the feces following the ingestion of their test diet. The diet is one of fixed consistency, preceded and following by a small dose of carmine. The value of this work is greatly appreciated by those who feel a scientific interest in the diseases of the gastro-intestinal tract, and while there are reasons why this cannot become a routine procedure, in hospital practice, at least, it is of great value in a study of gastro-intestinal conditions.

METABOLISM AND PRACTICAL MEDICINE. By Carl von Noorden. Anglo-American Issue under the Editorship of I. Walker Hall, M. D. Three Volumes. W. T. Keener & Co., Chicago, 1907.

A knowledge of the metabolism of the human organism has become absolutely indispensable to the careful, conscientious physician, and it is to this class that these volumes will appeal in particular. The work of von Noorden along these lines is too well known to need any recommendation. He has not relied, however, entirely upon his own research and observations, but has called upon the most prominent investigators of the problems in metabolism in Europe and America.

The first volume is devoted to the physiology of metabolism and is by Adolf Magnus-Levy. It is devoted to a review of the food stuffs, digestion and absorption, the fate of the food stuffs in the tissues and the study of metabolism in general in man. Among the interesting chapters in this volume may be mentioned those on the total energy exchange, nitrogenous metabolism, the influence of muscular work on metabolism, the influence of sexual processes, etc., the role of water, metabolism of mineral substances and metabolism in old age. There is no one more capable of writing a volume of this sort than Magnus-Levy. It is presented in a clear, concise way, and well translated by various authors.

Volumes two and three are devoted to the pathology of metabolism. Chapters are contributed by such authors as von Noorden, Kraus, Schmidt, Weintraub, Matthes, H. Strauss, Salomon, Czerny, Steinitz, Dapper, Neuberg, Loewi and Mohr. It would be impossible to call attention to all the excellent points contained within these covers.

The chapters on hunger and chronic starvation, over-feeding, diseases of the kidneys, diabetes mellitus, gout, obesity and mineral waters, are contributed by von Noorden and contain the sum and substance of all of his writings along these lines. The chapters on fever and infection, diseases of the stomach and intestines, diseases of the liver, diseases of the respiration and circulation and diseases of the blood are notably well written. At the end of each chapter is presented a complete bibliography on the subject covered. The work is a most excellent handbook and for its consummation much credit is due to von Noorden and Hall, as well as to the various collaborators.

A STUDY OF THE CAUSES UNDERLYING THE ORIGIN OF HUMAN MONSTERS. By Franklin P. Mall, Professor of Anatomy, Johns Hopkins University, Baltimore, Md. Published by the Wistar Institute of Anatomy and Biology. Philadelphia, 1908.

This volume is the outcome of a study of 163 pathologic human embryos, collected during the past fifteen years. While two previous contributions of the author to this subject were chiefly of an anatomic nature, the present contribution, as the title states, is devoted to a consideration of the etiology of the development of monsters. In the author's belief, his studies have established beyond doubt at least the following two facts: (1). The identity of pathologic embryos and small monsters, i. e., many of them would have developed into real monsters if they had not been aborted; and (2), that all monsters develop from normal ova, due to external influences—in man, to a condition which Mall terms faulty implantation. These external conditions affect the nutrition of the embryo; but there are present in every ovum properties which may cause it to develop into a monster. This has been fully demonstrated by experiments upon a variety of vertebrates, as well as by all the pathologic ova in Mall's possession, especially those obtained from tubal pregnancies.

It would be impossible here to point out adequately the enormous amount of information and scientific investigation embodied in this volume. But our interest and zeal to make the profession acquainted with this product of American scientific research, will be obvious from the following quotation from the author's introductory remarks: "It may be noted here that the obstetricians and gynecologists of America, as a class, advocate strongly the theory of maternal impressions, due largely, no doubt, to their insufficient scientific education. On the other hand, we may pride ourselves over the masterful strokes of American teratologists against this theory; the experimental teratologists have produced double monsters, spina bifida, and cyclopia, under the very noses of these practitioners, but they continue their futile speculations over mere coincidences."

DIE KOERPERPELEGE DER FRAU. Von Dr. C. H. Stratz. Verlag von Ferdinand Enke in Stuttgart.

We possess from the pen of Stratz a series of the most interesting books dealing with the form of the body of woman, its variations under the influence of race, dress and age. It is obvious that disease is another factor of first importance in changing the normal configuration of the various portions of the body. Considering the normal body only, pathologic change as a rule will mean disfigurement, and in this sense prevention of disease for the woman is equivalent, or at least necessary, to the preservation of beauty.

The proper care of the body of woman is identical with proper physiologic and esthetic dietetics. It is the purpose of this fascinating book to point out to physician and layman rational hygienic procedures during the various

stages of life, especially as demanded by menstruation, pregnancy, labor and the puerperium, and, last but not least, by the strict but ever changing laws of mode and style.

The author's captivating language, and his well-known artistic taste in the selection of illustrations, are adequately exemplified in this latest contribution, offering a wealth of valuable information and advice to every thinking physician.

HANDBUCH DER GEBURTSHILFE. Herausgegeben von F. von Winckel, in Muenchen. Verlag von J. F. Bergmann, in Wiesbaden.

The third part of the second volume of this most exhaustive work on obstetrics deals with the pathology and therapy of labor, not including obstetric operations (to which a special volume has been devoted already described in these pages). In the customary manner the subject is divided into the obstructions offered by the fetus, and those caused by the mother. The first group includes the anomalies of the cord and the ovisac; anomalous positions and presentations, malformations of the fetus, presence of more than one child; there is also added a chapter on the death of the fetus during labor. The presentation of the obstacles of the second group begins with a very exhaustive treatise on pelvic deformities, occupying more than 200 pages of this volume; this is followed by the consideration of the anomalies of the expulsive powers. The volume, furthermore, contains chapters on anomalies of the third stage of labor, on the influence of non-sexual diseases upon labor, and concludes with an essay entitled: General diseases and the death of the parturient woman.

Among the contributors to this volume we find the usual list of the best known German representatives of scientific obstetrics.

GYNECOLOGY AND ABDOMINAL SURGERY.—In two large octavos. Edited by Howard A. Kelly, M. D., Professor of Gynecologic Surgery at Johns Hopkins University; and Charles P. Noble, M. D., Clinical Professor of Gynecology at the Woman's Medical College, Philadelphia. Large octavo volumes. Original illustrations by Mr. Hermann Becker and Mr. Max Brodel. Philadelphia and London: W. B. Saunders Company. 1908. Per volume, cloth, \$8.00 net; half morocco, \$9.50 net.

In the last sentence of the preface of this work, its two distinguished editors express the hope that the work will be considered unique in its presentation and its claims upon the consideration of the profession. This work is unique in many aspects. For the first time here an attempt is made to cover both the fields of gynecology and abdominal surgery in one book. Thus it is the expression of the modern tendency of the American gynecologist to consider the diaphragm and the pelvic floor the natural boundaries for his operative field, of course, including the breasts. It may seem questionable whether this expansion is justifiable or even desirable, but once for ever these volumes seem to dispell any doubt that the presentation of these two subjects, undeniably related to each other, in one work is feasible and of a distinct practical value.

Space does not permit to enter here into a critical review or even to enumerate the many subjects considered in the 1700 pages of these two volumes, but this one fact is obvious, Kelly and Noble have shown rare skill in the selection of their collaborators and in the manner in which they have assigned to each a subject on which he is a recognized authority. Some chapters represent the completest and best illustrated essays extant on their respective subjects and among them special mention must be made of the chapter dealing with the pathology of the reproductive organs, or e. g., of Chapter XXI, entitled, "Radical Abdominal Hysterectomy for Cancer of the Uterus." These chapters also prove the advantage of good illustrations, and in this respect Kelly and Noble's new work undeniably stands far above anything ever attempted in a text-book.

This new contribution to medical literature demands the consideration of the whole profession. Its interest to the strict gynecologist, to the so-called abdominal surgeon and to the general surgeon is obvious, but that its editors have not neglected the needs of the general practitioner is proved by a chapter like that entitled, "Medical Gynecology," which, in 128 pages, thoroughly covers the non-operative therapy of gynecologic diseases.

PROGRESSIVE MEDICINE, Vol. III, September, 1908. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia.

Octavo; 285 pages, with 30 engravings. Per annum, in four cloth-bound volumes, \$9.00; in paper binding, \$6.00, carriage paid to any address. Lea & Febiger, Publishers, Philadelphia and New York.

The September volume deals with the following four subjects: Diseases of the Thorax and Its Viscera, by Ewart, with a summary of all the recent advances in our knowledge of tuberculosis; Dermatology and Syphilis, by Gottheil; Obstetrics, by Davis, and, concluding the volume, Nervous Diseases, by Spiller.

Progressive Medicine performs for the general practitioner and also for the specialist the very important service of bringing information which could not otherwise be obtained.

INTRODUCTION A L'ETUDE CLINIQUE ET LA PRATIQUE DES ACCOUCHEMENTS.—Par le Professeur L. H. Farabeuf et le Docteur H. Varnier. 375 Figures. Nouvelle Edition, revue et augmentée. Paris: Georges Steinheil, Editeurs. 1908. Prix: 15 Francs.

This well-known work has appeared in a new revised edition. As heretofore it is limited to the anatomy of the pelvis, the presentations, the mechanism of labor, and the following three obstetric operations: Extraction, version and forceps.

The numerous diagrammatic illustrations of this volume are of such unusual clearness and precision that the exact meaning of the text easily can be appreciated also by the reader who is not thoroughly familiar with the French language.

AUSCULTATION AND PERCUSSION; Together with the Other Methods of Physical Examination of the Chest. By Samuel Gee, M. D. Fifth Edition. Oxford Medical Publications. London: Henry Froude, Oxford University Press; Hodder & Stoughton, Warwick Square, 1907.

Dr. Gee always writes so engagingly and at the same time with such lucidity that his books are very pleasant reading. Moreover, drawing as he does upon a rich fund of personal experience, what he has to say is well worth attending to, even when, as in the present case, he makes no attempt at presenting the subject with German exhaustiveness. A point upon which he lays particular stress is the loose nomenclature which he believes has hitherto been the bane of books on physical diagnosis and which he makes a special effort to correct.

A STUDY OF THE HUMAN BLOOD VESSELS IN HEALTH AND DISEASE. By Arthur V. Meigs. Philadelphia and London: J. B. Lippincott Co.

The book of Meigs is a most important volume, particularly because of the very large number of observations made for it with the special object of establishing the value of many anatomic points hitherto neglected, not so much in regard to the arterial system as for the veins and capillaries. The chief object of the author is apparently to ascertain the changes that occur in vascular structures under normal or pathologic conditions. While similar studies have been presented by investigators in our own country and in Germany, they have been confined to a limited number of the blood vessels. Meigs has extended his investigations to cover the entire vascular system and his interpretations of the findings are accompanied by numerous beautiful illustrations. The volume is therefore a source of valuable information in the study of the physiologic and pathologic alterations that occur in the circulatory system. It is objective in its assertions and opinions for the reason that not only is the morphology of these structures considered, but also the changes in their functional and biologic relations. This latter feature makes the book very interesting reading, although the author in many instances disregards the results that exact physical investigations of the circulatory organs have brought out. The book must be read with a critical spirit.

SAUNDERS' POCKET MEDICAL FORMULARY. By William M. Powell, M. D., author of "Essentials of Diseases of Children;" Member of Philadelphia Pathologic Society. Containing 1831 formulas from the best known authorities. With an appendix containing Posologic Tables, Formulas and Doses for Hypodermic Medication, Poisons and their Antidotes, Diameters of the Female Pelvis and Fetal Head, Obstetric Table, Diet-lists, Materials and Drugs used in Antiseptic Surgery, Treatment of Asphyxia from Drowning, Surgical Remembrancer, Tables of Incompatibles, Eruptive Fevers, etc., etc. Eighth Edition, Adapted to the New (1905) Pharmacopeia. Philadelphia and London: W. B. Saunders Company, 1906. In flexible morocco, with side index, wallet and flap. \$1.75 net.

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EDITORIAL.

ETHER DAY.

The temper of the age is no longer content with short and pregnant passages descriptive of arresting events in the domain of science. A fuller expression is demanded so that an avenue of approach may be effected by which the great significance of an event shall stir to enthusiasm. That the right express to thought can be given only when a multitude of words are used is, in ordinary circumstances, a foolish axiom that would not be long in inviting criticism; but when the matter in hand is of the importance of the epoch-making discovery of ether, the address delivered by Dr. Welch at the Massachusetts General Hospital on the sixty-second anniversary of Ether Day, though open to the charge of redundant verbiage, has to its good the exalted virtues which pertain to all writings that attempt to illumine those whose tranquil acceptance of occurrences proclaims for apathy.

To estimate aright what is significant or insignificant in the province of facts does not require animation pushed to violence but a critical attitude endued with aims to emphasize where emphasis is necessary so that an irresistible stimulant to activity may be given. And surely the discovery of ether should be treated animatedly by any lecturer who is cognizant of the dire state of affairs that existed when a surgical operation was not unlike to the torture scenes of the Middle Ages in the halcyon days of the thumb-screw. It is not necessary to hark back many years to a time when "they strapped a man to a table, gave him a bullet to clench in his teeth and let him groan and flinch" during a surgical operation. For there were no anesthetics, antiseptics, or arterial forceps at hand; and though sympathy from the surgeon must have been forthcoming, the vain and delusive attempts to alleviate were the sort which to-day are tabooed in the operating room for the reason that they interfere with the sureness of the surgeon's hand. Medical statistics

are not at hand to enlighten us as to the atmosphere of pain as it then was in the operating room, but general literature has enough to show of the pre-ether days to prejudice us for the improvements which are now ours to abate suffering instituted by necessary operations. In that very pathetic tale by Dr. John Brown, "Rab and His Friends," there is sketched in no unworthy way the heroically suppressed physical suffering of James Noble's wife, Ailie, who with true Scottish fortitude and courage to face the inevitable, submits to one of the most painful operations known to surgery—the removal of a cancerous breast—without so much as a rebellious murmur to indicate that there must be something awry in a profession that lacks the wherewithal to mitigate human torment. This mastery of nerves, as shown in the character so graphically drawn by Dr. Brown, but illustrates a species of martyrdom which must have been most pleasing to the surgeon of those times, for it meant a quiescent condition greatly to be desired.

That the fictional character of whose sufferings we have given a glimpse had its counterpart in reality, is instanced in the recently published autobiography "Father and Son," by Edmund Gosse, for here we have a human document illustrative of what may not have been expected, but was exacted by the patient herself—it was the poet's mother—to combat any, or the least, thought that there might be a weakening of the mental powers in face of suffering. Now though these two citations are well enough in their way, and indicate the lengths to which both mental and physical endurance can go, we should not forget the harrowing scenes in the operating room in the first half of the eighteenth century—scenes made possible, or rather inevitable, by a weakness of will-power which to-day, thanks to our humane inventions, is regarded in the light of the usual.

In the welter of argumentation called forth by the advocacy or denunciation of modern scientific theories, the human mind is apt at times to lose its moorings in the tableland of sanity and drift in the wake of frenetic enthusiasms. Convergent imaginations of the intemperate sort are prone to give an exaggerated complexion to discoveries whose importance, as later on ascertained, did not merit their fanfaronades of tutorial indiscretions. That these are misdeeds goes without saying, for not only do they upset the judgment of those who are eager to acquire knowledge in the service of human progress, but by dwelling continually on the present, and even on what the future has in store for mankind, an obliteration of the great scientific red letter days of the past occurs, with results that make for a deplorable disregard of the evolutionary processes. And of all the links in that endless chain which has for its high purpose the unrelenting combat against pain and suffering, no stronger

link was ever forged in the past or can be in the future, no matter how great the scientific ingenuity, than the discovery made some sixty years ago by the obscure dentist, Horace Wells; for after its advent surgery, which had been the Cinderella in the medical household, leapt by quick stages into a lusty being of justifiable pretensions whose associations were no longer the barber and the quack.

THE APOSTLE OF RACE IMPROVEMENT.

The attitude of the scientific mind of to-day is tinged with an optimism that should be a decided uplift, not only to the younger men in the medical profession, but even to the older ones who, on account of the vicissitudes incidental to the drudgery of general practice, occasionally view our present advances with considerable pessimism. The long and stubborn fight against disease is yielding us not undeserved guerdons; and though some may think this to be the note of the day, there are others who are not content with this hand-to-hand fight, but are working or writing on lines which have for their object the introduction of important means by which life may be prolonged, the race improved, and the conservation of the mental powers effected, so that many diseases which to-day are dismissed with the rather flippant remark that they must obtain according to the order of nature shall, in the near future, be unknown even to him whose pride it is to proclaim, that in his long and varied career as a medical practitioner, he has seen every disease known to man. That the tendency of the times should be fraught with the exalted purpose to prevent what is often thought to be ineradicable in our defective mental and physical make-up, ought to be subject for congratulation with all of us; and since the seriousness of this tendency is at present being abetted by men of the best mental calibre throughout the world, we cannot but hearken to their various messages. Quite recently four books* and one lecture,** all of exceeding interest and of prime importance as expressions of the main-currents in the science of medicine, have told us that by exercising a scientific spirit prior to the appearance of what are now thought to be inevitable mental and physical disturbances, great good can be accomplished. Of the four books, the one just published by Mr. Francis Galton ranks highest, for in it we have his latest ideas about his arresting theory of Eugenics.

**Memories of My Life.* By Francis Galton, F. R. S. London: Methuen & Co. *The Age of Mental Virility.* By W. A. Newman Dorland. New York: The Century Co. *The Problem of Age, Growth, and Death.* By Charles S. Minot. New York: G. P. Putnam's Sons. *The Prolongation of Life.* By Elie Metchnikoff. New York: G. P. Putnam's Sons.

***There is no Decay:* a lecture delivered by Robert Ross of the Old Bluecoat School, Liverpool, on Feb. 12th, 1908. Liverpool: The Northern Publishing Company, Limited.

Students of Charles Darwin's works will have no difficulty in recalling his elaborate theory of Natural Selection and the sensation it occasioned throughout the scientific world at the time it was expounded. One would have thought, to judge from the mass of controversial outpourings published at the time, that the whole human race was in danger of undergoing such radical alterations that a complete mental and physical change for better or worse, would be effected. The majority was decidedly against the proceeding because it felt, with an intuition almost divine, that the interference with the laws of nature was a prerogative which had belonged to man for ages, and should not be disturbed because a visionary naturalist saw fit to subvert the mighty structure builded of customs, laws, and social restrictions. The infinitesimally small minority raised its voice in praise, only to meet an opposition whose echoes are with us still. Thus Natural Selection as a factor in the evolutionary processes of the human race went the way all theories go when the dominance of conventional minds is allowed to subdue a clarion note trumpeted forth by an untrammelled scientific mind!

Divorcing ourselves from the marl of heated controversy occasioned by the Darwinian theory, and passing into the clearer day where things can be seen aright, we must recognize as medical men that Natural Selection, while imbued with ideas that were sane and sound, really gave too much leeway to those whose judgment was not strong enough to weigh carefully the reasons for or against alliances that would work weal or woe for the human race. To assist in the endeavor for a betterment of racial conditions by checking the birth-rate of the Unfit and encouraging early marriages of the Fit, is Mr. Galton's serious thought to-day; and though his theory of Eugenics, or Race Improvement, is an interference with the dictates of nature as promulgated in that sociological Magna Charta, Natural Selection, the interference is not to be deprecated, for it means so thorough an education of all the various peoples that make up the world that in due course of time the Fit will dominate the Unfit. When this occurs the benefits reaped will be many, and though the complete suppression of the Unfit may never take place, there will be enough of good coming out of the theory to gladden the hearts of all physicians who to-day are mere sway boats when decision and candor are demanded of them in vetoing a marriage that can only be productive of evil to the race.

Mr. Francis Galton, rightly enamored of a theory that would, if put into complete operation, solve the most distressing medical problems which assail us to-day, illustrates in his old age—he was born in 1822—a mental virility and an unquenchable optimism that should inspire us with new, and somewhat startling, thoughts. For upon reading his auto-

biography what immediately occurs to one is that the age we live in cannot be so defective as the advocates of a decadent critical vocabulary would have us to believe, since it has produced not only one but many outstanding figures of Galton's exceptional intellect and deep interest in human welfare. Surely both Dr. Newman Dorland and Robert Ross have interpreted aright the true feeling of modernity; the former, in his excellent book with its strong plea for a just appreciation of the mental vigor of our intellectual giants in their old age; and the latter, in his refusal to believe that our age is less productive than former times, just because a few critics are purblind to its scintillations, and cry "decay" on account of a deplorable habit of regarding all modern progress as a Barmecide feast.

THE "AMERICAN WOMAN:" THE TYPE THAT IS A SOCIAL MENACE.

The broadside of scathing criticism, which was printed in the London *Spectator*, October 3d and 9th, on the subject of the type of American woman who carries destruction in her path, inasmuch as her philosophy of life is one of ease and luxury with scant notions of her duties as wife and mother, has attracted no little attention; for its author, Dr. Andrew Macphail, of Montreal, steeped his pen in enough trenchancy and causticity to evolve a picture whose bold, broad lines are an effective reading into a type of woman, the widening circle of whose undesired influence has been apprehended by us for some time. Were this influence limited to a small minority it would not be difficult to traverse Dr. Macphail's contentions; but with our knowledge of the large number of American women who arbitrarily limit the number of their children to suit their whims and fancies, it behooves us to admit that in the main the author of the biting criticism is no follower of an *ignis fatuus* born of a crotchety brain, but the seeker after a truth whose ghastliness cannot but bias medical men against a product our social *laissez-faire* has allowed to spring up. And that the product is suffered to grow without let or hindrance is indeed deplorable, for not only are its reprehensible practices a reflection on the whole womanhood of America, but before long the stamina of the nation will be imperiled, inasmuch as a habitual interference with nature must needs be inimical to the bearing of healthy children.

Fortunately for the conscience, if not already for the health of the nation, there is an awakening even with us to the evils which have emanated from that extraordinary phase in our lax sociology—the

"American woman." Two expressions* of late, from sources which cannot claim the slightest connecting link, indicate that the placid thought which has hitherto obtained in face of the complete management of the American family by the "American woman," is passing into a state of censoriousness that has all the good attributes necessary to an attack with foils without buttons. Persuasive words, influenced by a Puritanism that refuses to realize the full extent of the evil, are no longer the means by which writers and medical thinkers approach this social canker in the hope of reform; and when we remember how futile have been all attempts at coercing into some semblance of control, the vagaries of vain and self-sufficient women, by kindly advice only occasionally flavored with strong admonition, the cogency of the briefs which both Dr. Dorsett and Mr. Robert Herrick hold, is warranted by reason of the fact that to drive a matter of prime importance home there should be no mincing of words lest the sentient beings, who unfortunately control public opinion, might take offense. When a menace reaches the gigantic proportions mentioned by Dr. Dorsett in his paper—100,000 abortions are annually committed in New York according to a statement of Justice John Proctor Clark—the pause that is given us has the silences which result when a sense of shame is so deep that even a slight rebuttal on the score that a statement might be exaggerated, never occurs to us.

Though the excellencies of Dr. Dorsett's paper will not reach the general public despite their energy of thought and undeniable powers of logic, Mr. Herrick's book will be the right sort of missionary provided the reader, whether gentle or truculent, regards the plot as of secondary importance, and its well-expressed philosophy the message the secular mind is standing in need of. For with an art that is never prurient he unfolds the sickening tragedy of American family life resulting from the supineness of our moral castigators, so busily engaged elsewhere with problems which do not concern them, and the ascendancy of a theory of life that has the blighting characteristics of those who walk in the counsel of the selfish.

*Criminal Abortion in Its Broadest Sense. Chairman's address before the Section on Obstetrics and Diseases of Women, of the American Medical Association, Chicago, 1908. By Walter B. Dorsett, M. D., St. Louis.—Together. By Robert Herrick. New York: The Macmillan Company.

OPINION AND CRITICISM.

IN THE SERVICE OF TRUTH.

In the onward sweep of civilization, with its mighty educative forces as a means of elevating the backward thought of the benighted to the pellucid atmosphere of the stringent social and political laws of the Anglo-Saxon, there is never a thought that perhaps the sudden uprooting of barbaric tares may be the cause, not only of considerable physical discomfort and mental anguish, but of the dissemination of certain undesirable diseases which a kind Providence has made concomitants of the highest form of civilization. A case in point is the report of the state of affairs in Uganda, embodied in a paper recently read before the United Services Medical Society by Colonel F. J. Lambkin, R. A. M. C., and which illustrates most graphically the radical physical changes which have taken place in the Baganda tribe, due to the enforcing of the tenets of Christianity on a people who in their blindness had seen fit to keep their womankind under strict surveillance. With our knowledge of the degeneracy of the Red Man, directly there was grafted on him the subtleties of our social advancement, and the unwelcome acquaintance the inhabitants of outlying districts in the Philippine Islands made with venereal diseases, following the advent of the American soldier, it is not difficult to guess what the real causes are that at present are undermining the health of an intelligent tribe, who instinctively knew that semi-servitude of their women folk meant the sort of chastity in consonance with their barbaric ideals. But with the arrival of those who spread the Word, social customs which had obtained for years were overturned, and to-day England sees the spectacle of a once happy but irreligious people chastened by promiscuous sexual intercourse and the best species of immorality. In fact so thoroughly imbued are the women with the social rights that inhere in emancipation, and which were made clear to them in all their many ramifications by missionaries who could not for a moment abide the social degradation, that in some districts (Ankole) "it is estimated 90 per cent. suffer from syphilis, and 50 to 60 per cent. of the infant mortality is ascribed to the same cause."

What strikes us at once upon reading Colonel Lambkin's paper is the dire results which only too often are born of zealotry. Religion as a factor in civilization is not to be despised when it limits its beneficent offices to a spiritual uplift for those whose education is somewhat ready for its many intricacies, but when it is manipulated by fanatics who are ignorant of ethnology and what a sudden subversion of social customs really means for a people easily allured by promises and sophistry, it is

baneful to say the least. That it has much to answer for when it is used merely as a coercive agent in undoing what aeons have made part and parcel of the national life of a people, has been instanced many times before in history; but that these very modern days, so eager in the praises of all researchers who are endeavoring to stamp out diseases, should be darkened by a wantonness as illustrated in the dire conditions of Uganda, makes us doubtful of the efficacy of that much-lauded progressive spirit which, we are told, stands for complete liberation from the shackles of any religion.

MUSIC AND ITS EFFECTS ON THE SICK.

Quite recently there has come to us the intelligence that a well-known New York specialist who was supposed to be in the last stages of an incurable disease was so much benefited by the alluring tones as they issued forth from the throat of a celebrated singer, that a decided psychical change for the better became manifest at once and even the disease lapsed into a state of encouraging quiescence. All of which opens a vista that has illimitable length and breadth in its application as a comparatively new agent in the temporary control, if not the ultimate cure, of disease. Now although music of the instrumental sort was used with some success in a London Hospital a few years ago—patients of an emotional temperament were the subjects—the combined presence of an attractive woman and a vocal art in its best estate for abating certain symptoms peculiar to malignant growths, is indeed an innovation in therapeutics, and should be hailed by the staunch advocates of therapeutic nihilism as a discovery that has all the fascinations of palatability denied the stronger drugs. But though the ease with which this new therapeutic measure may be applied cannot be questioned there is a rift nevertheless in its perfectibility for if inattention is paid to the nationality of the patient, dire results may occur. What German, no matter how great his admiration of other music than his own, would be able to withstand the deleterious effects of French music of the Offenbachian sort when his temperature is abnormal? On the other hand what chauvinistic Frenchman would reckon his pain less when influenced by the mighty strains of Wagner's "Goetterdaemmerung?" Again it does not require the imagination of a lady novelist to picture the real anguish of an Italian patient in the throes of renal colic when assaulted by the innocuous and mildly inspired airs from Sullivan's "Pinafore" or "The Mikado." And furthermore what gyrations, on the part of those whose nerve ballast has been destroyed through long vigils accompanying physical anguish, would not be indulged in following the close application of selections from Charpentier's "Louise" or the terrific modern symphonic poem, Strauss' "Thus Spake Zarathustra!"

That music of a high order has a soporific effect on individuals who have only predilections for the less exalted music hall brand, has been brought home to us repeatedly at various symphony concerts; but what is important to remember is that though Berlioz and Beethoven may be a gratifying source of assuagement for nerves harassed by mercantile cares when the physical and mental conditions are normal, as we take them to be especially with the male part of a concert assemblage, it is wrong to infer that in the sickroom the same somnolent effects would be achieved. For it is within the bounds of reason to know that no super-session of pain by something milder could possibly follow a partial understanding of a musical theme with which the individual is completely out of sympathy on account of national traits and an abnormal condition. In fact the mental strain involved in compelling the already wearied brain to grasp the purport of a musical message would indicate that as yet, though psychotherapeutics is looming large on the medical horizon, the musical feature which might soon be included in this treatment, should be withheld, at least until such time as the musical education of the ordinary Anglo-Saxon equals his literary and scientific knowledge.

LITERARY NOTES.

It is in the nature of things, as they touch both medicine and literature, that certain medical minds should employ themselves with the solution of the problem of how it happens that some writers of fiction have a deep knowledge of medicine while others are ridiculously deficient. Dr. Pierre-Yves Even in his Paris thesis, "A Study of Edmund and Jules de Goncourt," lays bare the mental and physical sufferings of the two writers who were the protagonists of the naturalistic school of fiction, and shows in a scientific spirit what introspection of one's own physical disabilities and mental abnormalities may do as a means to an end,—the end in the case of the Goncourts being so thorough a transcription of their aches and pains to the pages of their books that a decided medical verisimilitude is leant them. That a full knowledge of medicine can be gained in this way would be straining the contention too far; but that it may be an excellent thing for the tyro of fictional writing to study his own deviations from normal health so that if he desires to make a character slightly abnormal, the means will be at hand to transcribe his own sufferings to his pages, even though the character is no pen picture of himself, is a step towards a happier state of medicine than occurs to-day in the world of fiction. The *British Medical Journal* in a recent issue gives many startling medical excerpts from novels, which show to what lengths a perverse education, presumably derived from the time-honored volume dear to all households, "The Family Doctor," will carry even recognized writers. In a novel recently read by us, "The Worldlings," by Leonard Merrick, there is an interesting conversation between the

doctor and the hero, from which we learn that a pneumonia, as it affected a worried old man, must have been brought on by anxiety! And yet this writer has received unstinted praise from Mr. William Dean Howells for his exact and remarkable photographic art in reproducing unexaggerated pictures of life.

In the new edition of his Bordeaux thesis, Dr. A. Chabé has added a chapter to the history of French ophthalmology by describing, in an erudite manner, the evolution of Bordeaux ophthalmology, from its earliest empirical beginnings in the Christian era until the present time,—a period that has many savants who do honor to the specialty. Aside from its literary and scientific value, its anecdotes are not only curious but of remarkable interest to the antiquarian. One of the first oculists of Bordeaux was Marcellin, the Empiric, who was born at Bazas and lived in the middle of the IVth century. He was the author of a book entitled, "Liber de medicamentis," published at Basle in 1336, which shows that he was deserving of his surname. Here are some of his choice pearls of wisdom: 1st—To evade, throughout the year, ocular pains, when cherries are luscious and most tempting to eat, crush three cherry stones, spread them on a piece of linen to make an amulet, but before wearing the amulet turn towards the Orient and make a vow not to eat cherries during the year. 2nd—Hold a fly with the left hand and whilst holding it mention the name of the invalid and say you are holding the fly to cure his eyes. Then place it between the folds of a piece of linen; suspend the same from the neck of the invalid and do not forget to look straight ahead, and not behind, while placing this amulet. 3rd—Do you wish to cure at once a person affected with pain in the eyes? Place around his neck a piece of linen having as many knots as there are letters in his name. Remember to pronounce each letter of his name while making the knots. 4th—One who has eaten a morsel of boiled stork can not have a blepharitis during many consecutive years. 5th—In case you see a shooting star, count rapidly until the star disappears. The number reached before its disappearance will indicate the number of years that shall elapse before you have a blepharitis. 6th—For foreign bodies in the eyes, produce a slight friction by gently passing the thumb and medical finger (the ring finger) three times over the open eye, saying each time a pass is made: "I embrace the head of Medusa." 7th—If there is a sty on the right eye hold (?) it by means of three fingers of the left hand, and standing in the open air, with looks turned towards the Orient, say: "Since stone is hard and dry and not covered with fleecy wool, so shall this sty remain hard and dry and finally dry up altogether."

ORIGINAL ARTICLES.

CONSERVATIVE METHODS OF TREATMENT OF THE INFLAMMATORY DISEASES OF THE TUBES.

By PALMER FINDLEY, M. D., of Omaha, Neb.

Professor of Gynecology, College of Medicine, State University, Nebraska.

The object of practicing conservatism in operating upon the Fallopian tube is to maintain or provide for the function of child bearing. The one function possessed by the tubes is that of transmitting the ovum from the ovary to the uterus.

It was formerly the custom to remove the tube altogether with the ovary, but it has been repeatedly demonstrated that the ovum may pass from an ovary to the tube of the opposite side and there be fecundated, and either remain in the tube to develop a tubal pregnancy or pass through the tube to the uterus, there to develop a uterine pregnancy. From these facts we have learned to conserve the normal tube and even a small portion of the uterine end of a normal tube when the ovary of the corresponding side has been wholly sacrificed and there is left all or a part of the ovary of the opposite side.

The surgical axiom, "save what can be saved," applies to the surgery of the tubes when the uterus and at least a part of one ovary is left intact. When the body of the uterus or both ovaries are removed the tubes can serve no good purpose.

In Tubal Pregnancy there is no place for conservative dealing with the pregnant tube. It should be removed en toto.

Chronic Inflammatory Diseases of the tubes afford great possibilities as well as great uncertainties in conservative operations.

We have learned from experience that simple catarrhal inflammations of the tubes, when treated tentatively, not infrequently resolve into a normal state. More than this, it has been observed that purulent infections of the tubes may eventually cease to inconvenience the individual and may not interfere with the occurrence of pregnancy. This, however, is not to be reckoned with.

I have had one case of bilateral pyosalpinx which was under treatment by douches and tampons for a year and which subsequently bore a child and with no untoward results. Martin reports two such cases.

How frequently we observe cases in the acute and subacute stages of a pelvic infection with the uterus and appendages matted, and pus in and about the tubes. We have seen these cases and believed them to

be hopelessly involved; yet under tentative treatment they have ceased to create disturbance, and have been so nearly resolved to the normal as to call for little or no surgical interference.

It therefore behooves us to be guarded in surgery of the tubes lest we remove that which may serve a good purpose.

Adhesions about the tube may be severed without sacrificing the tube provided the lumen of the tube is patent and the endosalpinx is normal.

Where the fimbriæ are matted, and serous secretions have accumulated in the tube without altering the structure of the tube wall, the fimbriæ may be teased apart or the fimbriated end resected. Kelly refers to the possibility of accidentally opening an avenue for the infection which has been pent up in the tube, permitting escape into the peritoneal cavity and with an occasional fatal result. The possibility of such an event should lead one to exercise the greatest caution. Wherever there is a possibility of a latent infection resident in the tubes no such conservative measures are permissible.

Clarence Webster resected the fimbriated end of a tube and at a later date found, upon opening the abdomen, that fimbriæ had reformed at the resected end of the tube.

The effort has been to conserve part or all of the tube distended with pus, blood or serum. Stripping the tube of its contained blood or pus and irrigating the tube with sterile normal salt solution by means of a small canula inserted into the abdominal end of the tube has been advised and practiced by a few operators. Such conservatism is not justified.

Benign tumors of the tube, notably fibromata, have called for resection of the tube at the proximal end of the tumor. Such opportunities have been rare, for reason that these tumors are seldom found.

1. *Acute Salpingitis.* The treatment of acute inflammations of the tubes is essentially that of acute pelvic inflammation in general. Rest is enjoined in view of limiting the infection to the tube and preventing its spread to the neighboring structures. Manipulations of the tube in the early stages of infection are dangerous because at such times the abdominal end of the tube is not securely closed and the infectious secretions may be stripped from the tube into the pelvic peritoneal cavity. For this reason no unnecessary pelvic examinations should be made, and all operative measures should be proscribed unless drainage per vaginam is demanded for the relief of septic intoxication and pain. Depletives, notably hot vaginal douches and glycerine and ichthyol tampons, should be used long after the acute inflammatory reaction has subsided. If these methods are persisted in the results will often be most gratifying. The progress of the infection may be checked, exudates within the lumen of the tube and tube wall may be absorbed and if the inflammatory process has not gone on to the destruction of cellular elements and the building up of newly formed connective tissue, it is possible that the

tube may not only be restored to functional activity, but to a perfectly normal anatomical condition.

In addition to the application of douches and tampons hot hip packs, hot fomentations and ice bags are of service in relieving pain. The diet should be light and nutritious and the bowels kept freely open with saline cathartics and enemata. As a rule anodynes are not demanded. Where septic symptoms are manifest enemata of normal salt solution will lessen the toxic symptoms and greatly add to the comfort of the patient; the functions of the bowel, skin and kidneys are accelerated, the disturbances of the stomach due to toxines are alleviated and pain is lessened.

Freub of Amsterdam reported 70 per cent. of cures of salpingo-ovaritis without operative intervention. In these cases the uniform treatment was as follows: "Complete rest in bed and the application of an ice bag as long as there was any fever; the acute symptoms past, warm vaginal injections (45 degrees centigrade), vaginal tampons, glycerine and warm water compress on the lower part of the abdomen. The duration of the treatment varied from three weeks to several months; the average duration could be rated at about six weeks." The author does not claim complete cure in all of these cases. In all cases the women were wholly relieved of their symptoms. In a limited number of these cases, numbering 433, there were slight relapses.

Freub holds that over one-half the cases of salpingo-ovaritis necessitate no operative interference.

Chronic Salpingitis. We ask, should all tubes, the seat of chronic inflammation, be sacrificed? This has been and is to-day the general practice, but in view of the fact that so large a percentage of these cases are brought to the state of functional cure by the exercise of conservative measures it is apparent that surgery should not be invoked until non-operative means have been given an extended trial. Surgery cannot replace a diseased tube by a normal tube, hence it follows that the removal of an unoffending lesion of the tube can serve no good purpose.

The severity of the symptoms in no way correspond to the extent of the lesion in the tubes. There may be an accumulation of pus in the tubes, in the absence of symptoms, and there may be serious complaint from an apparently insignificant lesion.

As a general proposition we may say that so long as a salpingo-ovaritis lets the patient alone we should let it alone, so far as surgery is concerned.

In the chronic stage of salpingitis the treatment is directed toward the relief from annoying and distressing symptoms, and so far as possible to the restoration of the diseased tube to the normal. When these efforts, faithfully and intelligently directed, have failed to bring about the desired results, it is time for surgical intervention, but not until then.

The conservative measures applied in the treatment of chronic salpingitis are as follows: Vaginal douches of water at 110° F., twenty minutes in duration and repeated twice daily, are given in the recumbent position. Glycerine (93 parts) and ichthyol (7 parts) tampons are applied daily.

Combination of the douches and tampons affords the most effective means of depleting the congested pelvic tissues. Under this treatment tenderness and pain are relieved, inflammatory swellings are reduced and the functions of the tubes and neighboring organs are in part or wholly restored. Under this treatment, extending over a period of one year, I have seen a case of bilateral pyosalpinx arrive at a functional cure and to the degree which provided for pregnancy and a successful delivery. Pelvic massage properly directed and persisted in for the requisite time will bring favorable results in selected cases, but in America this method of treatment has found little favor. I have personally found little satisfaction in it.

Pressure therapy is of still less value in the treatment of salpingitis because of the high location of the tube. Freedom from violent exercise and the careful regulation of the bowels should be enjoined.

A CASE OF PERSISTENT SINUS AFTER NEPHRECTOMY.*

By WALTER C. G. KIRCHNER, M. D., of St. Louis.

The case which I shall report is interesting because of the symptoms which it presented following in the course of several operations. The patient entered the hospital for the purpose of having a sinus on the right side of the abdomen removed. The history of the case offered opportunity for an interesting study, and made it difficult to determine the exact origin and cause of the sinus.

The sinus opening was about three fingers' breadth below the costal margin at the outer border of the right rectus muscle. Here there was an oblique abdominal scar. A probe inserted into the sinus tract took a direction toward the kidney, and there was also a tract leading toward the pelvis. There was a moderate amount of discharge from the wound. The patient said that the sinus had persisted for more than a year, and that its presence annoyed her greatly, the condition requiring frequent dressings and interfering therefore with her comfort.

Patient stated that on October 22, 1906, while in Boston, she was seized with pain at four o'clock in the morning, and was unable to get out of bed. The body and limbs seemed stiff. An hour and a half later she began to vomit copiously and had to urinate frequently. The persistent vomiting and frequent urination continued during a period of three days when she decided to return to her friends in Ohio. She was scarcely able to walk, but on arriving at her destination in Ohio was received at a hospital. The physicians there decided that immediate operation was indicated. She thought that at that time she had some fever. The condition seemed so urgent that an operation was performed, the diagnosis, according to her statement, resting between gall-bladder trouble and appendicitis. At the operation, it was stated, a large pus cavity was encountered, and it was thought that this had communication with the region of the appendix and that the surgeons were dealing with an appendiceal abscess.

Drainage had been instituted, gauze drains later being replaced by rubber tubes. At first there was a copious discharge of pus, but later clear fluid escaped. The patient stated that she thought that in quantity about thirty-four to thirty-six ounces of urine were passed daily. The discharge of fluid from the sinus was so annoying that five months later a second operation was contemplated. The patient had been given methylene blue which showed itself in the fluid coming from the sinus. The urine was only slightly colored blue. Cystoscopic examination re-

*Read before the St. Louis Medical Society (Surgical Section), October 24, 1908.

vealed that urine was coming from the left ureter but none from the right. It was thought best that an operation on the kidney be performed, and this organ was consequently removed. The patient was unable to state whether or not the kidney was diseased.

After the nephrectomy the copious discharge of fluid from the sinus ceased, but the sinus tract itself persisted and the discharge of pus was kept up. In this condition the patient presented herself for a cure.

Upon further questioning it was learned that the patient was thirty-two years of age, that she was unmarried and that she had always enjoyed good health. She stated that she had never been sick. She was a seamstress and was regular in her habits. She had never had a cough, nor had she ever complained of any bladder or pelvic trouble. At no time was there blood in the urine. About six years ago the patient first noticed discomfort in the right side which was referred to the kidney region. The back would become stiff, and this stiffness and rigidity seemed to affect the right limb. The pain would most frequently come on at night time, and she found it necessary at such times to sleep in a sitting posture. The pain usually would wear off in about half an hour, and it was never so severe as to keep her from her daily duties. These severe attacks of pain would come on perhaps every three or four months, usually after doing some heavy work such as lifting or washing. Although the patient would take exercise occasionally, she never felt comfortable while wearing a tight corset.

The pain which usually came on at night when the patient was on her back was of an aching character and was relieved by pressure over the kidney region. It produced a sickening sensation in her stomach, and she would at such times vomit continuously, sometimes these vomiting spells persisting during a period of a week. Vomitus was greenish in character. At no time, however, was there fever.

She had had three very severe attacks which were about three months apart. The pain was located in the small of the back, and did not seem to radiate nor to extend down into the groin. The question of floating kidney had been considered, but this diagnosis had never been verified by any of the physicians whom she had consulted. The pain was usually ascribed to lumbago or rheumatism, but it was not relieved by the usual antirheumatic remedies. The patient had noticed that during the attacks of pain she urinated more frequently and that also it seemed to her that the quantity was greater than usual.

With these facts before us we performed a third operation for the purpose of removing the sinus tract, not knowing exactly whether this originated from the kidney, the gall-bladder or the appendix.

Under general anesthesia, incision was made along the outer border of the right rectus muscle. The sinus was plugged with gauze, and the skin margin sewed over the sinus to prevent soiling. With great care the sinus tract was isolated, and the intestinal and omental adhesions broken up. The denuded peritoneal surfaces were covered over with

Lembert sutures. The appendix was found involved in a few adhesions, apparently, however, normal in character, and was removed, the stump being buried in the cecum with purse string suture. The gall-bladder was examined, and found in normal condition. Clamp placed at the base of the sinus tract, one portion of which led to the renal vessel. The other portion communicated with the right ureter, and was ligated and severed. The mass was then easily removed, bleeding vessels being ligated and supplementary flank drainage instituted. The abdominal wound was closed in layers.

Examination of the specimen showed it to be an old sac, probably a cyst of the kidney. The patient made an uninterrupted recovery.

From a study of the case it seems that the patient had been suffering for some time from symptoms referable to the kidney, condition most probably being one of hydronephrosis. This condition became chronic, and later, suppuration taking place, the symptoms became so acute that operation was necessary. The operation most probably revealed a large pus sac, which could easily have simulated an appendiceal abscess. At a subsequent operation nephrectomy was performed, a sac, however, having been left in situ, which contributed to the formation of a permanent sinus. The case seems then to have been one of hydronephrosis with subsequent suppurative changes.

EXAMINATION OF THE STOOLS OF INFANTS.*

By JOHN ZAHORSKY, M. D., of St. Louis.

It is gradually becoming generally recognized that the so-called curds in the stools of infants are not casein coagula but soaps. Repeated analysis has shown that these curds are composed principally of the fatty salts of calcium.

It occurred to me that it would be valuable to have some clinical tests by which the "curds" of soaps and the "curds" of casein could be readily distinguished; for it must be admitted that their gross appearance is very deceptive. Numerous tests and experiments were made to find a reagent which would promptly reveal the nature of the curd, but in many instances, owing to the composite nature of the coagulum, the reactions and tests were somewhat doubtful, hence it is necessary to try several tests in order to reach definite conclusions.

I.

Appearance. The curd composed of soaps is more granular in appearance and can usually be readily crushed with a spatula.

Formaldehyde. If a coagulum of casein is placed for several hours in a strong solution of formic aldehyde it becomes tough and leathery. A lump of calcium soap is not hardened to any appreciable extent by this process.

Solubility. A lump of calcium soap is almost completely soluble in absolute alcohol to which about 10% of hydrochloric acid has been added. The casein curd is not affected by this menstruum. If a suspicious lump is taken from the stool, first thoroughly shaken with petroleum ether, which removes the fat and fatty acids, then decanted, a considerable residue remains. Hot water removes an additional quantity (soluble soaps). Finally, acid alcohol may be used which removes the insoluble soaps. After this a small residue remains varying in amount in different stools. The nature of this residue was not determined; probably it consists of bacteria, cells, mucus and rarely casein.

Stains. An attempt to find a specific stain among those ordinarily found in a clinical laboratory, met with partial success. I found iodine a very reliable strain. The mass of feces should be cut in half in order to expose the inner structure. Tincture of iodine is then poured on the masses in a test tube or dish. After ten minutes it is thoroughly washed with alcohol, which almost completely decolorizes the mass composed of soaps but has little effect on the brown-colored casein.

Another stain which may be used is carbol-fuchsin. This intensely stains both soaps and casein masses; in the former the ordinary de-

*Read before the Bethesda Pediatric Society, with demonstrations.

colorizing agents will remove most of the stain, while the casein is with difficulty decolorized. In general the avidity of casein to stains is much stronger than the coagula of stools, which are composed principally of soaps, and the former holds the stain with greater tenacity. By use of these several tests the clinician can with certainty decide whether a certain lump in the stool is composed of soaps or consists principally of casein.

Quite a large series of tests has convinced me that casein coagula in the stools are very rare.

II.

Another interesting phenomenon concerning the stools is the change of the yellow to the green stool. About two years ago I reported some observations with which the conclusions of Wernstedt were not in accord.

The yellow stool owes its color principally to bilirubin. If a mass of yellow stool is shaken with chloroform, this menstruum soon becomes intensely yellow, showing that the coloring matter is dissolved. This corresponds to the properties of bilirubin. But chloroform does not dissolve the green pigment of green stools.

Absolute alcohol, however, dissolves the green pigment, especially if acidulated with hydrochloric acid. A beautiful green solution may thus be obtained. Hence, the green color is probably biliverdin, as has been asserted by several authorities and denied by others.

When a stool showing a slight greenish tinge is exposed to the air it often becomes intensely green. By trial I found that this change to the green color can not be prevented by placing the stool in a covered dish with 40% solution of formic aldehyde. It seems, therefore, improbable that the oxidation of bilirubin to biliverdin depends directly on the activity of microorganisms.

Koeppé* followed Wernstedt's researches but was unable to corroborate his main conclusions that the oxidase depends on mucous corpuscles. He declared that in order to produce the green color a peroxid must be present in the stool, a ferment to decompose the peroxid and a pigment which turns green on oxidation. Koeppé asserts that the addition of peroxid of hydrogen to a yellow stool will gradually turn it green. While this is true in the main, tests show a marked difference in the natural green stool and those artificially produced. Every stool possesses the power to decompose hydrogen peroxid, that is, contains a catalase, hence the ferment is invariably present, and if the pigment is invariably bilirubin, according to the rules of Koeppé, it would seem that the presence of a peroxid would almost invariably induce a change of the yellow stool.

As a matter of fact the most common process in the stool is a reducing process. It is by the reducing action of bacteria that the yellow bilirubin is changed to the white hydrobilirubin which forms the principal pigment

*Monat. f. Kinderheilk., 1906.

of the light-colored and clay-colored stools. Hydrobilirubin is very rarely found in the stools of breast-fed infants, while it is generally present after the seventh day of life in artificially-fed babies. The light-colored stools signify that bacterial decomposition of the intestinal contents has taken place, since reduction processes accompany proteid putrefaction.

Hecht* lays down the rule that the green stools can appear only when the reduction processes in the intestine are hindered in some way. As these reduction processes occur in the large intestine it seems rational to assume that any condition which forces the intestinal contents rapidly through the colon would prevent the reduction of bilirubin and thus give an opportunity for its oxidation. Strange as it may seem then, any cause which diminishes the putrefactive processes in the intestine should favor a yellow or green stool rather than the white stool. It is probably for this reason that green stools follow the administration of calomel and sometimes castor oil.

Wernstedt made the point that the green pigment adhered to the mucus principally, but this has no special significance since Schorlemmer found that mucus has a special affinity for bilirubin.

The actual cause of the green stool is still not clear although we are gradually becoming better acquainted with some of the conditions under which bilirubin is oxidized.

In conclusion, I wish to call attention to the Schmidt sublimate test. If a concentrated solution of corrosive sublimate is added to fresh feces which contain hydrobilirubin, a peculiar red discoloration is produced. This test may be used in differentiating cases of suspected acholia from the very light stools of so-called milk indigestion.

1460 S. Grand Ave.

*Muench. Med. Woch., 1907.

OBSERVATIONS ON FAT-INCAPACITY IN YOUNG INFANTS.*

By A. S. BLEYER, M. D., of St. Louis.

Without clearly understanding in what way the presence of fat in a rational milk mixture can be the cause of vomiting, colic and constipation, I have made it a practice for some time, whenever confronted with a vomiting baby, to remove the fat from the milk, for experimental purposes.

It has seemed to me that where the fat was removed the indication for sodium citrate becomes relatively infrequent, and I do not now administer the soda until I have ascertained if the removal of the fat does not for the moment solve the problem. It is quite certain that there is a group of cases in which either method will meet with equal success. I have seen high proteids well tolerated by vomiting babies upon the removal of the fats.

In practically all of my cases there were large white curds in the stools at some time or other during the vomiting period. I do not know anything of their relation to the vomiting or pain except that of incidence and wish only to state that they were usually present.

As for the occurrence of colic, it was present in most of the cases and was noticed in every one of the five observed in babies exclusively on the breast. What its existence may have to do with the presence of fat in the milk I do not know, nor am I certain that it has any relation whatever, like the hard curds its occurrence is here noted.

In this series there were five exclusively breast-fed babies and about twenty exclusively fed on cow's milk modified. All my cases have been under five months of age. Following are examples of these groups:

J. G., a fine looking exclusively breast-fed baby of six weeks, first seen on December 2, 1907. Mother not neurotic and is intelligent. Baby has been attended for three weeks by two physicians for obstinate constipation and attacks of intense pain, coming on several times every day and lasting for a half hour at a time or longer.

Baby vomits after every nursing, on one occasion three hours afterwards; he often vomits at night. At times he seems to get much relief by this act. The muco-cutaneous region of the anus is violently reddened but there is no intertrigo present. Examination of one ounce of mother's milk expressed from one breast shows 6.1 per cent. fat by the Babcock test; it is not of a normal bluish tint but looks creamy. Since yesterday the appetite has failed, there is an abundance of mucus in the stool and small white masses of rather hard consistence; besides this there are many small masses containing a few grains of yellowish-brown sand

*Read before the Bethesda Pediatric Society on Sept. 25th, 1908.

enclosed in mucus. Examination of these sandy masses shows them to be made up of thousands of hair-like fatty-acid crystals.

Mother placed on a limited fat-free, strictly nitrogenous diet with tea and water and told to take exercise. Each feeding was preceded by a half ounce of weak barley water to which was added four grains of citrate of soda, each nursing from the first milk from both breasts. An enema of saline solution ordered for each morning.

Under this diet the mother's milk diminished in amount of fat to less than half within four days. During nine days there was no improvement in the child and he lost several ounces in weight. On December 11th, the breast was discontinued and a weak mixture of Horlick's malted milk was ordered, soda and barley water stopped. By the end of thirty-six hours the awful crying spells and all pain had disappeared, the vomiting disappeared coincidentally, no white masses in stools, no sand. During this week the baby gained five ounces and was sleeping seven hours without awaking at night, the bowels were moving two or three times daily.

In one week it was again attempted to put him to the breast, with however, a return of the above symptoms in great intensity. It was therefore discontinued a second time and the maltose food ordered continued for two weeks longer.

Four months later, *i. e.*, on April 27, 1908, the mother reported that when the child was put to the breast the second time, the symptoms above enumerated failed to return, he now, at six months, weighed 16 pounds and 3 ounces. I regret very much that I did not give a modification of skim cow's milk for this child, for the evidence against the fat, if it is present in this case would then have been stronger.

Another instance of this type in a breast-fed baby was brought to my notice by Dr. Royston, of the Washington University Maternity Out-clinic. This was a colored male child of four weeks weighing 7 pounds, 8 ounces. Nursing habits had been good, mother a primipara, breasts were of the conical type and were turgid. Bowels had been moving two or three times daily until past few days when, coincidentally with what seemed to be colic, the child had become constipated, the stools had been large, yellow and sometimes slimy; in all the stools during these past days there had been large white lumps. Baby strains at stool, stools seem to have become hard. Examination of breast milk, one ounce extracted from one breast contained approximately 6.6 per cent. fat, that is, the cream layer reached 11 in 24 hours in Holt's creamometer.

Four days later Dr. Royston reported that the baby was very sick, that he was suffering intensely and that something must be done. He was now vomiting every feeding; there had been no stool within two days. Several doses of milk of magnesia resulted in the passage of a very large stool of a coppery color containing many air-bubbles; it smelled exactly like rancid butter and was inclined to be ropy. Unfortunately a fat determination of this stool was not made.

The mother was now placed on a strict diet, the first half of each feeding was taken from both breasts in order to avoid the deeper milk, and fifteen drops of milk of magnesia were administered in a half ounce of sugar of milk water immediately before each feeding.

Three days later examination of the milk gave a reading of 2.5 per cent. by the Babcock test and there had been a satisfactory disappearance of vomiting and pain. This was on September 8th last, and Dr. Royston reports more recently that, save for occasional crying, everything is all right with the baby now.

Following are brief reports of cases of this type fed exclusively on modifications of cow's milk:

Wm. P., age four months, white, seen on the 3rd of this September. For two weeks baby has been taking 40 ounces daily of milk from the laboratory of the St. Louis Pure Milk Commission, containing proteids 1.5, fats 3.2, sugar 6.5, lime water 7, and has been vomiting every feeding.

Dr. Bassett saw this case for me at my feeding clinic and, because of the vomiting and the weight of the infant,—7 pounds 4 ounces,—reduced the percentages to proteids 0.9, fats 2.2, sugar 5.5, lime water 5, giving 36 ounces of food per day; energy quotient of 69 per pound as opposed to 101. This change was made on September 9th and on September 14th the mother complained that there was no improvement in the vomiting; besides this the child was doing a great deal of crying, seemed hungry, was constipated and passed white masses in the stools and had lost 3 ounces in weight.

A prescription for certified milk, of proteids 1.15 instead of 0.9; fats 0.2 stead of 2.2, and sugar 6 without lime water was given. Daily quantity 36 ounces, calories 373, quotient 53 as opposed to 69. Three days later the mother reported with the baby; there was now no vomiting for the first time in four weeks; it had stopped immediately upon the withdrawal of the fats. I did not see a stool but the mother stated that they were moving easily and without any hard masses. This baby was seen again on September 21st and on September 24th; he has not vomited a single time since September 14th and has gained 3 ounces. On the latter date the quantity of food was increased to 1262 grams, containing 598 calories; 1 per cent. of fat was added and one more per cent. of sugar.

The second case in this group is that of M. K. This baby is four months old; he was first seen on July 27th last; he had been attended by three physicians and was in a very bad condition, weight 7 pounds 5 ounces; he had been a vomiting baby from birth. Breast milk had been given for two weeks, then Eagle brand condensed milk in low dilutions, (1 to 10 at two weeks) and later on an unknown combination of cow's milk was given.

At time he was first seen the stools were loose, but there was severe crying at stool; the stools contained small white masses and were slimy. There was a violent redness immediately surrounding the anus but no intertrigo. Because of the marantic condition some maltose was added

to the fat-free food now prescribed, which was as follows, proteids 1.6, fats 0.3, sugar 2.45, Mellin's food 4, daily quantity 36 to 40 ounces, calories 345, quotient 47 per pound.

One week later mother reported at the clinic; vomiting had ceased altogether, the child was very hungry and had lost one ounce; stools loose. No change was made in the mixture and 17 days later the child was brought in showing a gain of 16 ounces. No vomiting, stools loose.

An interesting fact in this case was now brought out; it was attempted to return to a modification of whole milk, the only change being the addition of 2.10 per cent. fat. Contrary to what was hoped for, the child was still incapable of handling the fat and promptly began to vomit. It was decided therefore to return to skim milk and to increase the proteids slightly. When seen on September 21st, the child had gained 38 ounces (*i. e.*, since August 3rd, a period of 49 days) and was consuming 45 ounces of fat-free food daily, calories 793, quotient 84. He is now 6 months old and weighs 9 pounds 6 ounces.

I can not close without drawing attention to a case in this interesting group seen only yesterday, in which the apparent harmlessness of even a high proteid is seen where fat is absent from the milk.

This baby is only 8 weeks old, he weighs 6 pounds 3 ounces, cries a great deal, strains at stool and is constipated; stool exhibits pasty white curds; there is considerable vomiting. He was losing weight on a rational milk mixture containing 498 calories, a quotient of 79, although taking his milk with a ravenous appetite.

Because of the plan to put him on a fat-free milk, the proteids were raised to a little over 2. Sugar of milk was used to bring the sugar to 7, the calories being lowered to 372, quotient 52 as opposed to 79.

I concluded that if this child would gain on a fat-free milk of quotient 52 when he was losing on a milk mixture containing 2.2 per cent. of fat with a quotient of 79, that his case would offer strong evidence that the presence of the fat was interfering with the absorption of his food. After three days, he had gained 2 ounces.

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THE CASE OF JONATHAN SWIFT.

By GEORGE M. GOULD, M. D., of Ithaca, N. Y.

(CONTINUED FROM NOVEMBER ISSUE.)

"The fierce exercise by which he had striven to defy his torture was now over: he could scarcely be persuaded to move from his chair, and his body, which had shrunk to skin and bone, now recovered its plumpness: the wrinkles left his face, which now, in spite of the thick snow-white hair that overhung it, had an aspect of almost child-like gentleness. Still, his state was one where controlling and guiding power was wanting, rather than one of ordinary insanity. He "never talked nonsense nor said a foolish thing." He was very "quiet and peaceful." (74.)

SUDDEN SICKNESS AND SUDDEN WELLNESS. When a patient, for long periods or for a life, has constant "ups and downs" of health, the disease is plainly functional for the most part, and evidently depends upon some fundamental cause which is subject to variableness, now normal, now morbid. When the symptoms of such a patient are those well-known by all good oculists to be produced by morbid function of the eyes, and when they are relieved completely by cessation of the morbid function, i. e., "near-work," the diagnosis makes itself: unless the professional diagnostician knows nothing about eyes, and because of venial and deadly sinning disbelieves in eyestrain. The striking and often emphasized nature of "migraine," periodicity, with sudden illness, culminating in crisis, followed by sudden clearing up and perfect health, makes it the example *par excellence* of all such diseases. In Swift's case the phenomenon is almost ideally "typical:"—

"I have had my giddiness 23 years by fits." (45.)

"Mr. Lewis assures me that you are now well." (45.)

"Swift is in perfect health and spirits, the joy of all here who know him, as he was eleven years ago." (57.)

"I have recovered my hearing for some time at least, recovered it so as not to be troublesome to those I converse with, but I shall never be famous for acuteness in that Sense, and am in daily dread of Relapses." (57.)

"My deafness has left me above three weeks, and therefore I expect a visit from it soon." (57.)

"I was nine weeks very ill in England, both of Giddyness and Deafness, which latter being an unconvertible disorder I thought it better to come to a place of my own, than be troublesome to my friends or live in a lodging; and this hastened me over, and by a hard Journey I recovered both my Aylments." "Neither did I go to Court, except when I was sent for, and not always then. Besides my illness gave me too good an excuse the last two months." (59.)

"I should think according to what hath been formerly, that I may happen to overcome this present disorder." (59.)

"All that we have left now to comfort us, is to hear that you are in good health." (59.)

"To our great joy, you have told us, your deafness left you at the inn in Aldersgate Street." (59.)

"The recovery of your health." (60.)

"My head is never perfectly free from giddiness, and especially toward night. Yet my disorder is very moderate, and I have been without a fit of deafness this half year." (61.)

"I never was better in my life than this winter." "I have escaped both headaches and gout." (63.)

"As you have had several attacks of the giddiness you at present complain of, and that it has formerly left you, I will hope, that at this instant you are perfectly well." (63.)

"I am just recovered in some degree, of two cruel indispositions, of giddiness and deafness, after seven months. I have got my hearing; but the other evil hangs still about me, and I doubt will never quite leave me, until I leave it." (64.)

"I am extreme glad to hear you are got well again; and I do assure you, it was no point of ceremony made me forbear writing, but the downright fear of being troublesome. If you have got off your deafness, that is a happiness I doubt poor Lady Suffolk will never have." (65.)

"I am tolerably well, but have no security to continue so." (67.)

"Good stomach improves every day."

"I sincerely congratulate with you upon the recovery of our dear friend the Dean." (68.)

"I have been very ill these two months past with giddiness and deafness, which lasted me until about ten days ago, when I gradually recovered, but still am weak and indolent." "I am well enough to ride." (68.)

"I received yours of the 9th of March, with the state of your health, which was the more agreeable, as it contradicted the various reports we had of you." (69.)

"The Dean's better health." (69.)

"You had been ill, but were perfectly recovered." (69.)

"* * * now in perfect health." (69.)

"Though others tell me you are in pretty good health, and in good spirits, I find the contrary when you open your mind to me." (69.)

"I found by your last, that your hand and your head are both in so good a condition." (70.)

"I received a letter from you at Cirencester, full of life and spirits." (70.)

"I had the pleasure of hearing you were well and in good spirits." (70.)

"The Dean is in good health." (71.)

"His health is as good as can be expected, free from all the tortures of old age; and his deafness, lately returned, is all the bodily uneasiness he has to complain of." (72.)

"Mr. Stopford who told me that you had enjoyed a better state of health last year than you had done for some time past." (72.)

DESPONDENCY, MISANTHROPY, AND THE DREAD OF INSANITY. When a severe and constantly recurring disease of mysterious origin and nature afflicts a patient; when the disease is not one *per se* that shortens

life; when insanity does not, or need not, result; when the disease which tortures both body and mind is easily curable—then the effect of the tragedy upon the onlooker passes from the highest pathos to the profoundest grief of sympathy and to the extremity of indignation. These were the conditions throughout Swift's life. The nature of his disease is now well-known, and we have thousands of living demonstrations that it was due to an easily removable cause, but the tradition and the habit of medical minds of that time, as Craik says, was that it was "due to structural malformation near the brain." Craik alludes of course, to the exploded myth of *Ménière*. But even Craik, a non-medical man, had the astuteness denied to the present day professional leaders, to suggest the doubt, even in the face of the no-knowledge, that it is not necessarily so. Vast numbers of patients afflicted with migraine, a disease peculiarly fitted to set up the brooding and fear, have in the past entertained the same secret horror of subtle fateful brain disease. Most of our biographic clinics illustrate it to-day. Millions of sufferers are needlessly tortured by "migraine," and of these a large proportion are torturing themselves with the concealed fear of insanity and coming death. As did Swift, these plainly gave way to unnecessary solicitude about their health. Swift's correspondents understood this, often alluded to it, and upbraided him for giving away. Swift even confesses that he used the fear of coming attacks to keep him from sociability, and that he made excuses of his nonexistent deafness, loss of memory, etc., to avoid meeting people, etc. Pessimism and misanthropy, when coupled with "frenzied physical exercise," even if one knew no other symptoms of a patient, would lead the alert oculist to a tentative diagnosis pretty certainly to be proved by further questioning. And if this further inquiring brought out the symptoms clumsily and loosely grouped under the terms, "Migraine," "*Ménière's* disease," "bilious attacks," "nervous headache," "nervous dyspepsia," "sick-headache," "neurasthenia," "nervous breakdown," "nervous prostration," "hysteria," etc. (unknown names for unknown diseases, of unknown nature and unknown therapeutics!)—then the fashionable medicine of the present time would,—well, would go on just as it has done since "Migraine" has existed and since *Ménière* taught. And yet, and yet, "Migraine" and *Ménière's* disease are more easily curable or preventable than ingrowing toenail.

But let us examine the patient:—

"I detest the world because I am growing wholly unfit for it." (57.)

"I have been long weary of the world, and shall for my small remainder of years be weary of life, having forever lost that conversation which could only make it tolerable." (about 58.)

"I continue very ill with my giddiness and deafness, of which I had two days intermission, but since worse, and I shall be perfectly content if God shall please to call me away at this time." (59.)

"But I grow so old that I despond, and think nothing worth my care except ease and indolence, and walking to keep my health." (59.)

"I hear you are melancholy because you have a bad head and deaf ears." (Mrs. Howard to S.) (59.)

"What have I to do in the world? I never was in such agonies." (about 59.)

"For life is a tragedy wherein we sit as spectators awhile, and then act our own part in it. Self-love, as it is the motive to all our actions, so it is the sole cause of our grief." (60.)

"I fear my present ill disposition both of health and mind has made me but a sorry comforter." (60.)

"* * * seldom in a tolerable humour by the frequent returns of dreads of Deafness." (61.)

"Whatever may be the correct medical theory of Swift's malady, the story of these last years stands out, in its main features, clearly enough. During 1738 and 1739, as we have seen the irritation greatly increased: in 1740, it rendered him scarcely capable of seeing strangers; and to his morbid gloom was now added either loss, or absolute confusion, of memory. It was during this year that the miserable wrangle about the correspondence, bred of Pope's vanity and deceit, was dragging on its course: and Swift was as unheeded and unheeding in the midst of the attacks upon him, as if he had been dead." (Craik.) (60, 61 and 62.)

"I live wholly within myself; most people have dropt me, and I have nothing to do, but fence against the evils of age and sickness as much as I can, by riding and walking." (62.)

"When I was of your age, I thought every day of death, but now every minute; and a continual giddy disorder more or less is a greater addition than that of my years." (65.)

"I want health and my affairs are enlarged: but I will break through the latter, if the other mends. I can use a course of medicines; lame and giddy." (65.)

"I could heartily wish your other complaints were as much without foundation, as that of having lost half your memory, and all your invention." (65) (Ford, letter to S.)

"* * * with so ill a memory and so bad a state of health." (65.)

"If my health and the bad situation of my private affairs will permit." (65.)

"You will observe in this letter many marks of an ill head and a low spirit." (65.)

"I have too many years upon me and have too much sickness." (65.)

"Dispirited enough by sickness and years." (65.)

"I do not think life is of much value, but health is worth everything, and nature acts right in making that method which prolongs life absolutely necessary to preserve health, which makes a short life and a merry a very foolish proverb. For my own part I labor daily for health as often and almost as many hours as ever man does for daily bread." (65.)

"I am as sick of the world as I am of age and disease, the last of which I am never wholly without." (66.)

"Am afraid of being surprised by my old disorder in my head, far from help, or at least convenience; and I dare not so much as travel here without being near enough to come back in the evening to lie in my own bed." (67.)

"My death, which my bad state of health makes me expect every month." (67.)

"My state of health is not to boast of; my giddiness is more or less too constant; I sleep ill and have a poor appetite I can as easily write a poem in the Chinese language as my own." (67.)

"* * * daily increase of ill health and old age." (68.)

"Years and infirmities have sunk my spirits to nothing." (68.)

"* * * so ill a state of health, and lowness of spirits." (68.)

"My disorders with the help of years, make wine absolutely necessary to support me." (about 68.)

"Years and infirmities have quite broke me; I mean that odious continual disorder in my head. I neither read nor write nor remember nor converse. All I have left is to walk and ride." (69.) "I find such a weekly decay, that has made it impossible for me to ride above five or six miles at farthest, and I always return the same day heartily tired." (69.)

"My health is very much decayed, my deafness and giddiness are more frequent; spirits I have none left; my memory is almost gone." (69.)

"I have for almost three years past been only the shadow of my former self, with years and sickness." (69.)

"I have entirely lost my memory, incapable of conversation by a cruel deafness, which has lasted almost a year, and I despair of any cure." (70.)

"I have been many months the shadow of the shadow, etc., of Dr. Swift. Age, giddiness, deafness, loss of memory, rage, and rancour against persons and proceedings—I have not recounted the twentieth part—I *nunc et versus tecum meditare canoros*." (70.)

"I am already alarmed with your excuse of deafness and dizziness. Yielding to such a complaint always strengthens it; exerting against it generally lessens it. Do not immerse in the sole enjoyment of yourself." (71.) (Castledurrow to S.)

"The year which followed was one, not of gradual, but of rapid, decay. Disease had long been there: but old age was now opening the way for its fiercer inroads. The strong brain that had so long resisted the attack, was now too weak to maintain the struggle: memory was going: the tenacity of his clear logic had dwindled into the losse and broken peevishness of senility. The decline into absolute ruin was quick and striking." (72) (Craik).

"In August and September, 1739, his memory was still in such a condition that by the assistance of an intimate friend, who was acquainted with the current of his politics and conversation, so far as they regarded his own times, he could have entertained with pleasure any stranger whatever, but not without the help of such an assistant: for, in the rapidity of his discourse, his memory would frequently fail him: yet by turning to his friend and asking with a seeming carelessness, 'What was I going to say?' he would, upon the least hint, recollect his ideas." Transcript of letter from Deane Swift to Lord Orrery, amongst Lord Cork's MSS. (72.)

Five years before his death he wrote to his cousin: "I have been very miserable all night, and to-day extremely deaf and full of pain. I am so stupid and confounded that I cannot express the mortification I am under both in body and mind. All I can say is that I am not in torture; but I daily and hourly expect it. Pray let me know how your health is and your family. I hardly understand one word I write. I am sure my days will be very few; few and miserable they must be. If I do not blunder it is Saturday, July 26, 1740. If I

live till Monday I shall hope to see you, perhaps for the last time." (72.)

"Even she (Mrs. Whiteway) was forced to visit the Deanery by stealth in order to see that he was cared for. Unseen by him, she watched the Dean, as in his restless agony he paced the room ceaselessly walking, as she tells us, for ten hours a day. He would eat only when alone: and even after it had been left in his room for hours, his food was often taken away untouched." (74.)

"Another prayer was also overheard, when he cried in his agony "to be taken away from the evil to come." In January, 1742-41, his behaviour, we are told, "was grown perfectly intolerable." (74.)

"I eat my morsel alone like a king, and am constantly at home when I am not riding or walking, which I do often and always alone." (?)

"I had at least half a dozen returns of my giddiness and deafness, which lasted me about three weeks a-piece. When this disorder is on me I have neither spirits to write, or read, or think, or eat." (?)

Johnson replied: "That does not make his book the worse. People are influenced more by what a man says, if his practice is suitable to it, because they are blockheads."

"My breakfast," he wrote, "is that of a sickly man, rice gruel; and I am wholly a stranger to tea and coffee."

"To all people of quality and especially of titles I am not within; or at least am deaf for a week or two after I am well."

"He allowed his friends to speak of that malady that filled him with such ghastly forbodings, in the tone of light comment, that suited their own passing ailments. Dark as his future was to himself, he did not show its full gloom to his friends." (Craik.)

"In later years cynicism, enduring sadness, and increasing disease wore away the sprightliness of aspect that belonged to him: and as the Dictator of St. Patrick's, he bore a look that is disagreeable in its overstrained haughtiness,—a look which in a lesser man one would have been inclined even to call one of insolence. In the Deanery at St. Patrick's, and at Howth Castle, there are portraits of Swift, taken long after this, when the Drapier bore dictatorial sway in Dublin: and in both of these we see the domineering sneer with which he accepted the incense of a nation whose applause he despised even while he courted it. The brightness, the keen eye of the ready combatant, the freedom of the humorist, all are gone; and we see instead, a man whose hopes are dead, to whom life has yielded chiefly the withered leaves of cynicism, and who, with a sort of studied carelessness, accepts the power that has fallen to his lot, in a sphere beyond whose narrow confines he had once borne sway. There is another picture, which appears in Lord Orrery's Remarks, which is clearly one of Swift in his later days, just before he entered on the dark valley that for him preceded death. In it we see the anguish, the loneliness, the despair of one who sounded depths in human nature that he feels would have been better unexplored, and who stands gazing as it were, into a future which is overcast by dread of coming ill. Another portrait is one taken from a cast after death, when that later placidity which, we are told, belonged to his appearance in the second infancy of old age, had passed away, and there remained only the distorted wreck that partial paralysis, preceding death, had left." (Craik.)

"There was indeed one other very real and very terrible excuse for Swift. Amongst all the stories of mental struggle of which our

literary annals are full, there is none which is so full of mysterious interest as that of Swift. Beyond all troubles of fierce temper, violent emotions and over-strained self-inspection, beyond all the ravages wrought upon a high-strung nature by years of dependence, poverty, and repression; beyond the loneliness that came from his scornful pride, Swift had another burden to bear. This was the forboding of mental darkness. Though insanity, even at the end, scarcely seemed to release him from the pains of self-consciousness, yet the dread of it hung over him ceaselessly through life. It was no process of gradual decay. Until it dealt its final and decisive blow, it neither clouded nor impaired the clearness of his intellect. But ever-recurring pain warned him that the inevitable and unconquering cause was there, and the struggle seemed only the more intense from the strength of the citadel that was at last to be overthrown. We shall have to return to this more than once when the symptoms become more marked: but this much it is well to lay down at the outset of Swift's life. To say what he had to say with absolute simplicity: to be clear as to his own position and his own aims: to be misled by no abstractions: these were main objects in Swift's life. But, for all that, it was a life darkened by a constant struggle, foreseeing defeat at last, and made melancholy by the physical inroads through which that defeat was finally accomplished."

"Of these mere physical causes it belongs rather to medical science than to literary biography to speak. Their outward symptoms were those two maladies which from the age of twenty to his death never for any long period left him. What they meant, how they arose, what tended to their aggravation, it is hard to say. Swift himself, was fond of recurring to the theory of some trifling occasion, such as an early surfeit of fruit or an accidental chill. On these, the first and last words have been spoken by Johnson. "The original of diseases," he says, "is commonly obscure; and almost every boy eats as much fruit as he can get, without any inconvenience." Swift no doubt felt in later years, some injury to his health both from fruit and from chills. But with no undue confidence we may assert that the real source of the disease lay more deep; and medical investigation, if it does not absolutely prove, is at least consonant with the belief that he suffered from structural malformation near the brain. Whatever its character might be, that malformation never till the end obscured the marvellous lucidity of his thought, but neither did it ever suffer him to forget the signs of disease that it produced. In Swift we have one whose clearness of intellectual vision never needs to ask for a lenient judgment, but whose moral depression calls from first to last for all the forbearance we can show." (Craik.)

"The same absence of sympathy with his fellow men explains the unconscious irreverence with which he often treats religion. Strict as was the discipline that Swift imposed upon himself, yet the greater part of the world of ordinary religious ideas was a region where there was no resting-place for him. Unquestionably Swift's was a nature, in the highest sense, religious: we feel that Swift, though he never attained to true poetic utterance, had a temperament, which in his own words, was "blasted with poetic fire." (Craik.)

"The question is sure to occur, what justification was there for all this gloom and misanthropy?" (Craik.)

"Johnson knew and shrank from, the bitterness that was bred in Swift as it was in himself, of hardship, of early poverty, of disappointed hopes, and of the ceaseless burden of ill-health."

As to Swift's "Insanity," his biographer is correct in denying anything of the kind, even in the last days, if a correct definition of the term is held in mind. It was indeed marvellous that he had not long previously become really insane:—

Sir William Wilde in his *Closing Years of Dean Swift* gave the first careful analysis of Swift's symptoms: and successfully proved that the term insanity had been far too sweepingly applied to Swift. He showed that the Dean suffered throughout life from brain pressure, aggravated by gastric attacks: and that congestion, to which he says the name of *epileptic vertigo* might be applied, was ultimately accompanied by paralysis, under which the brain sank into lethargy rather than insanity.

Sir William's "brain-pressure," "gastric attacks," "congestion," and "epileptic vertigo," would need but a passing smile, if "the most recent and most careful medical analysis" did not still keep on to-day to mumble the same inept, ludicrous, and meaningless words. And yet the biographer feels compelled to add:—

"His final insanity was of a peculiar kind. According to the most recent and careful medical analysis, it was no slowly developing disease of the brain itself, gradually deepening from partial into confirmed insanity. Until the actual injury came to the brain, Swift, however morbid in his mood, however bitter in his cynicism, and however unmeasured his anger, was as far from insanity as could be conceived. Structural malformation was there, affecting the nerves of the ear, and producing giddiness and deafness. (Craik.)

Pseudoscientific impertinence! Most people are "insane," have dementia and "paralysis" during the death-rattle. In the "Unpublished Letters of Dean Swift," one reads: "Who can wonder that Sir Robert Walpole exclaimed, *Anything but History, for History must be false.* Possibly Walpole and Swift were thinking of the medical kind of history!

THE DOCTORS OF SWIFT'S TIME. A glance at the puzzles and practices of the physicians of Swift's day is not without an illuminating suggestiveness,—left to the reader's mind without comment.*

*The doctors of no time are much concerned with the role that tobacco plays in the production of pharyngeal, aural, and nervous disease. Snuff-taking should be particularly injurious. Swift wrote:

"My head is pretty tolerable, but every day I feel some little disorders; I have left off snuff since Sunday, finding myself much worse after taking a great deal at the Secretary's, April 14. My head is still wrong, but I have had no normal fit only I totter a little. I have left off snuff altogether, I have a noble roll of tobacco for grating, very good." June 7. "Are you as vicious in snuff as ever? I believe, as you say, it does neither hurt nor good; but I have left it off and when anybody offers me their box I take about a tenth part of what I used to do, and then just smell to it, and privately fling the rest away: I keep to my tobacco still as you say, but even much less of that than formerly, only mornings and evenings and very seldom in the day." He never smoked but he used to snuff up cut and dry tobacco, which sometimes was just colored with Spanish snuff. He would not own that he took snuff." (43.)

"This doctor tells me that I must go into a course of steel though I have not the spleen." (44.)

"I must go and take a bitter draught to cure my head." (45.)

"I have done good lately to a patient and a friend in that complaint of vertigo, by cinnabar of antimony and castor, made up into boluses with confect of alkermes. I had no great opinion of the cinnabar; but trying it amongst other things, my friend found good of this prescription. I had tried the castor alone before, not with so much success. Small quantities of tinctura sacra, now and then will do you good." (51) (Arbuthnot to S.)

"But I thank God for some time past I am pretty well recovered and am able to hear my friends without danger of putting them into consumptions. My remedy was given me by my Tayler, who had been four years deaf and who cured himself as I have done by a Clove of Garlick steeped in Honey, and put into his Ear, for which I gave him half a crown after it had cost me 5 or 6 Pounds in Drugs and Doctors to no Purpose." (53.)

"I know how unhappy a vertigo makes anybody that has the misfortune to be troubled with it. I might have been deep in it myself, if I had had a mind, and I will propose a cure for you, that I will pawn my reputation upon. I have of late sent several patients in that case to the Spa, to drink there of the Geronstere water, which will not carry from the spot. It has succeeded marvellously with them all. There was indeed, one who relapsed a little last summer, because he would not take my advice, and return to his course, that had been too short the year before. But, because, the instances of eminent men are most conspicuous, Lord Whitworth, our plenipotentiary, had this disease, (which, by the way, is a little disqualifying for that employment;) he was so bad that he was often forced to catch hold of anything to keep from falling. I know that he was recovered by the use of that water to so great a degree, that he can ride, walk, or do anything, as formerly." (56) (Arbuthnot to S.)

"I wish the poison were in my stomach (which may be very probable, considering the many drugs I take)." (59.)

"His physician and friend, Dr. Arbuthnot assures me, he will soon be well. At present, he is very deaf, and more uneasy than I hoped that complaint alone would have made him." (59) (Mr. Pope to Dr. Sheridan concerning S.)

"I have been this ten days inclined to my old disease of giddiness, a little tottering; our friend understands it, but I grow cautious, am something better; cyder and champaign and fruit have been the cause. But I am now very regular and I eat enough." (59.)

"I long to eat of your fruit, for I dare eat none here." (59.)

"I am extremely sorry that your disorder has returned; but as you have a medicine that has twice removed it, I hope by this time you have again found the good effects of it." (Mr. Gay to S.) (59.)

"I have mentioned the case as well as I know it to a physician, who is my friend; and I find his methods were the same, air and exercise, and at last ass's milk. I will tell you sincerely, that if I were younger, and in health, or in hopes of it, I would endeavor to divert my mind by all methods in order to pass my life in quiet; but I now want only three months of sixty, I am strongly visited with a disease, that will at last cut me off, if I should this time escape; if not, I have but a poor remainder, and that is below any wise man's valuing." (59.)

"I have passed six weeks in quest of health, and found it not: but I found the folly of solicitude about it in a hundred instances: the contrariety of opinions and practices, the inability of physicians, the blind obedience of some patients and as blind rebellion of others. I believe at a certain time of life men are either fools or physicians for themselves; and zealots or divines for themselves." (60) (Pope to S.)

"Mrs. Dingley says she cannot persuade Mrs. Brent to take a vomit. Is she not (do not tell her) an old fool? She has made me take many a one without mercy." (60.)

"That you are very much out of order; sometimes of your two old complaints, the vertigo, and deafness, which I am very sorry for." (Dr. Arbuthnot to S.) (60.)

"The passage in Mr. Pope's letter about your health does not alarm me: both of us have had the distemper these thirty years. I have found the steel, the warm gums, and the bark, all do good in it. Therefore, first take the vomit A; then every day, the quantity of nutmeg in the morning, of the electuary marked B, with five spoonfuls of the tincture marked D. Take the tincture but not the electuary in the afternoon. You may take one of the pills marked C, at any time when you are troubled with it; or thirty of the drops marked E, in any vehicle, even water. I had a servant of my own, that was cured merely with vomiting. There is another medicine not mentioned which you may try; the pulvis rad. valerianæ sylvestris, about a scruple of it twice a day." (62) (Dr. Arbuthnot to S.)

A.

R. pulv. rad. ipecacoanæ, scruple 1.

B.

R. conserv. flavedin. aurant. absynth. Rom. ana drams vi rubigin. martis in pollin. redact. drams iij. syrup e succo kermes, q. s.

C.

R. as. foetid. drams ij. tinctur. castor. q. s. M. Fiant pilulæ xxiv.

D.

R. cortic. peruviani elect. rubigin. martis ana dram i, digere tepide in vini alb. Gallic. lb. ij per 24 horas: postea fiat colatura.

E.

R. sp. cor. cerv. sp. lavendul. tinctur. castor. ana dram ij misce.*

"She has fancied herself in a consumption a great while: but though she has had the most dreadful cough I ever heard in all my life, all the doctors said it was not that; but none of them did say what it was. The doctor here, who is an extraordinary good one, (but lives fourteen miles long, long miles off) has lately been left ten thousand pounds, and now hates his business; but says it is a sharp humour that falls upon her nerves, sometimes on her stomach and bowels; and indeed, what he has given her has, to appearance, had much better effect than the millions of things she has been forced to take." (64) (From Lady Betty Germain to S.)

*As these receipts may possibly be useful to some person troubled with the Dean's complaint of giddiness, Dr. Arbuthnot's receipt of bitters for strengthening the stomach, is added.

Take of zedoary root one drachm; galangal and Roman wormwood, of each two drachms; orange peel, a drachm; lesser cardamom seeds, two scruples. Infuse all in a quart of boiling water, for six hours; strain it off, and add to it four ounces of greater compound wormwood water.....H.

"I am extremely concerned to hear of the ill state of your health. I was afraid of it, when I was so long without the pleasure of hearing from you. Those sort of disorders puzzle the physicians everywhere; and they are merciless dogs in purging or vomiting to no purpose, when they do not know what to do. I heartily wish you would try the Bath waters, which are allowed to be the best medicine for strengthening the stomach; and most distempers in the head proceed from thence. Vomits may clean a foul stomach but they are certainly the worst things than can be for a weak one." (65) (Ford to S.)

"Lane only pours down medicines for the sake of the apothecary, and though he reaps the benefit of them I receive none." (65) (Miss Kelly to S.)

"I know physicians who, if you take them out of their practice, are very good sort of men; but was there ever in the world a consultation of them, that tended to anything else than robbery and murder?" (Bathurst to S.) (65.)

"My breakfast is that of a sickly man, rice-gruel." (66.)

"I am sorry to hear your complaints still of giddiness. I must recommend to you a medicine, which is certainly a very innocent one, and they say does great good to that distemper, which is only wearing oil-cloth the breadth of your feet, and next to your skin. I have often found it to do me good for the headach." (67) (Lady Betty Germain to S.)

"Heartily thank you for your generous invitation, which, however, I dare not accept for fear of another attack; against which I must fence, by taking vomits and other medicines prescribed for me by some physicians who happen to be my friends." (67.)

"I am glad you have got the piles, because it is a mark of health, and a strong constitution." (68.)

"Prevented by my old disorder in my head; for which I have been forced to confine myself to the precepts of my physicians." (68.)

"As you are sensible your disorders are chiefly occasioned by a cold stomach, I believe there is not anything so likely in this world to cure that disorder as the Bath waters; which are daily found to be a sovereign remedy for disorders of that kind: I know, Sir, you have no opinion of drugs, and why will you not try so agreeable a medicine, prepared by Providence alone?" (68) (Mrs. Barbour to S.)

"My constitution must certainly be a pretty good one; for it has resisted the attacks of five eminent physicians for five months together, and I am not a jot the worse for any of them." (69) (Pultenay to S.)

"The epileptic tendency to which so many of the Dean's symptoms point, appears to have broken out fiercely at the last. For thirty-six hours, we are told, he lay in strong convulsive fits. But these passed away: and the final exhaustion came on." (77.)

From the report published in 1882 by Dr. Bucknill* on the subject of Swift's disorder, I quote:

"The maladies of giddiness and deafness from which he suffered had their common origin in a disease in the region of the ear, to which

*Bucknill's worthless article is a good example of the easy slipshod acceptance of a diagnosis by the modern "scientist," who without any labor in gathering facts or ability to digest them, slides over all difficulties with that skill which gives the false satisfaction to the author and to the careless reader the erroneous impression of knowledge and observation.

the name of *Labyrinthine vertigo* has been given. He was, however, well advanced in life before these disorders attacked him at the same time. In 1734, he said: "It is only of late years that they have begun to come together." "I got my giddiness," he said, "by eating a hundred golden pippins at a time." And of this Johnson remarks: "The original of diseases is commonly obscure. Almost every boy eats as much fruit as he can get without inconvenience." Thinking little, exercise, and wine were Swift's chief remedies. *Vive la bagatelle* was his favourite maxim. He was like Johnson in thinking weather and seasons of slight importance. "I never impute any illness or health I have to good or ill weather, but to want of exercise, or ill air, or something I have eaten, or hard study, or sitting up; and so I fence against those as well as I can: but who a deuce can help the weather?" (Hill, Unpublished Letters of S.)

"The fanaticism of our day, which accidental coincidences of vapours in the brain produce, is as old as the Sect of the Aeolists with their wind-bags, and as the frenzy of the priestess of the Delphic oracle. Compare Hudibras, Part II, Canto iii, v. 773, with the ninth section of the Tale." (Craik.)

"In such a spirit Arbuthnot waited for death, which released him in the following spring, his piety mingled to the end with much of his half-humorous half-philosophical apathy, which suggests to old Alderman Barber the saying of Garth, as applicable to Arbuthnot, "that he was glad to die, being weary of having his shoes pulled off and on." (Barber to Swift, April 22, 1735) (Craik).

THE EYES AND THEIR ABUSE CAUSED ALL THE MISCHIEF. Owing to Swift's prejudice, at once ludicrous and tragical (how frequent in Medicine is the combination!) against spectacles, we have a most unusual mass of data showing that the eyes themselves suffered and caused the suffering. Generally in the worst kinds of systemic reflexes starting in the eyes there are few or no complaints or diseases of the eyes. This is according to a well-understood law. But in Swift's case, the most outrageous disregard of every rule of ocular hygiene, and the greatest abuse of the eyes, brought disease of the organs themselves. This, in "the vicious circle of disease," recreated and intensified the attacks and frequencies of cerebral, aural, gastric, and other reflexes so common in migraine.* The increased severity of these morbid effects, is, as always, noteworthy, by increased reading, writing, etc. As in so many cases, past and present, the immediate connection between near-work with the eyes and the recurrence and intensification of the attacks is strikingly suggestive.

*Swift also had many of the somewhat rarer but still frequent symptoms of migraine known by the old-time doctors but well forgotten by the new-time ones. For instance, he was often "plagued by perpetual colds and twenty ailments," by "cruel cold," "bad cold," etc. And he had that symptom daily complained of in patients with sickheadache,—"pain these two days exactly on top of the left shoulder," "constant pain in the shoulder," "not able to go to church or court for my shoulder." Illustrations of different reflexes could be added.

"His sight had long been failing. Twelve years earlier he had told how Vanessa:

"Imaginary charms can find
In eyes with reading almost blind." (42.)

"You must know I write on the dark side of my bed-chamber, and am forced to have a candle till I rise, for the bed stands between me and the window, and I keep the curtains shut this cold weather. So pray let me rise; and Patrick, here, take away the candle." (43.)

"His head confounded everything; often he could not scribble even his morning lines to MD, and, with his occasional giddiness, he found the late dining of the ministers a thing to be avoided. He walked, because of the walk, but he walked plaguy carefully, for fear of sliding against his will." (43.)

"He had, sitting in bed that morning, a fit of giddiness; but he hoped in God he should not have more of it. He attributed it to late sitting and writing on the previous night. He had taken brandy; he never now eats fruit or drinks ale; and he has better wine than they. The fit had troubled him sorely, he is at no pains to conceal, and next night, without going to the coffee-house, he came home at six, and writ not above forty lines ("some inventions of my own; and some hints"), and read not a bit, and all for fear little MD might be angry; and he took four pills which lay in his throat an hour; and he supposed he could swallow four affronts as easily. Next day, and day after, he had no giddiness." (43.)

"This involved close and constant work, and Swift paid for it the penalty of ill-health. Close and ill-ventilated lodgings, with the press of exciting business, brought back his old enemies, deafness and giddiness." (43.)

"I was lying ill of a cruel disorder, which still pursues me, although not with so much violence; and I hope your grace will pardon me, if you find my letter to be that of one who writes in pain." (44.)

"This letter 45 is very brief; so altered in the writing by illness as hardly to be recognizable for his; and is addressed in another hand." (44.)

"A very disordered head hindered me from writing early to your lordship." (45.)

"I have been about five weeks in this kingdom, but so extremely ill with the return of an old disorder in my head, that I was not able to write to your grace. I have been the greatest time at my country parish, riding every day for my health. I can tell your grace nothing from Dublin, having spent the days I was there between business and physic." (45.)

"Have been hindered from writing by the illness of my head and eyes, which still afflict me." (50.)

"Neither my Head nor Eyes will suffer me to write more." (50.)

In some pretty lines to Stella on her birthday, Swift said:—

"For nature always in the right
To your decay adapts my sight;
And wrinkles undistinguished pass,
For I'm ashamed to use a glass;
And till I see them with these eyes,
Whoever says you have them, lies."

On another birthday he wrote to her:—

“This day then let us not be told
That you are sick and I grown old;
Nor think on our approaching ills,
And talk of spectacles and pills.” (About 50.)

“I think to go soon into the country for some weeks for my Health.” (50.)

“This is as much as I can send you at present from a giddy aking head.” (52.)

“I can do no work this terrible weather; which has put us all seventy times out of patience. I have been deaf nine days, and am now pretty well recovered again.” (56.)

“You shall take care of your health, and go early to bed and not read late at night.” (57.)

“I am again with a Fitt of Deafness. The Weather is so bad and continues so beyond any Example in memory, that I cannot have the Benefitt of riding and I am forced to walk perpetually in a great Coat to preserve me from Cold and wett.” (57.)

“I read no prints.” (57.)

“The Fault of my Eyes the Confusion of my Deafness and Giddyness of my Head have made me commit a great Blunder. I am just come from the Country where I was about three weeks in hopes to recover my health.” (57.)

“My eyes will not suffer me to read small prints; nor anything by Candle-light, and if I grow blind, as well as deaf, I must needs become very grave, and wise, and insignificant.” (57.)

“I cannot read at night, and I have no books to read in the day.” (About 59) (Hill).

“I have so severe a defluxion of rheum on both my eyes, that I dare hardly stir abroad. You will be ready to say, physician, cure thyself; and that is what I am about. I took away, by cupping, fourteen ounces of blood; and such an operation, would, I believe, have done you [*italics by the editor*] more good than steel and bitters, waters and drops.” (59) (Bolingbroke to S.)

“Ask all the friends I write to, and they will attest this mistake to be but a trifle in my way of writing; and could easily prove it if they had any of my letters to show. I make nothing of mistaking untoward for Howard; wellpull for Walpole; knights of a share for knights of a shire, monster for minister; in writing speaker I put *n* for *p*; and a hundred such blunders which cannot be helped, while I have a hundred oceans rolling in my ears, into which no sense has been poured this fortnight; and therefore, if I write nonsense, I can assure you it is genuine and not borrowed.” (59.)

“I never was in such agonies as when I received your letter and had it in my pocket. I am able to hold up my sorry head no longer.” (59.)

“I can hold up my head no longer.” (59.)

“This is a long letter for an ill head.” (59.)

“My head will not bear writing long.” (59.)

“* * * where I used to read and——, there I got my deafness.” (59.)

“He wrote down his feelings and the record of her character, beginning that night, and continuing from day to day, save when “his head aches, and he can write no more.” (60.)

"The same vexatious ailment, when I could neither give myself the trouble to write or read." (60.)

"Finding it troublesome to read at night." (60.)

"This is all I can see after half blinding myself with reading yr Clerks copyes." (61.)

"I lived very easily in the country; Sir Arthur is a man of sense and a scholar, has a good voice, and my lady a better; she is perfectly well bred and desirous to improve her understanding, which is good, but cultivated too much like a fine lady. She was my pupil there, and severely chid when she read wrong; with that, and walking, and writing family verses of mirth by way of libels on my lady, my time passed very well, and in very great order; infinitely better than here, where I see no creature but my servants and my old Presbyterian housekeeper, denying myself to everybody till I shall recover my ears." (61.)

"Yet I cannot read at nights, and am therefore forced to scribble something, whereof nine things in ten are burned next morning." (63.)

"I am sorry that my writing should inconvenience your eyes, but I fear, it is rather my style than my ink, that is so hard to be read; however, if I do not forget myself, I will enlarge my hand to give you the less trouble." (64.) (From a letter to Swift.)

"Perpetual pains in my head have hindered me from writing till this moment, so you see you are not the only person that way tormented. I dare believe there are as many bad heads in England as in Ireland; I am sure none worse than my own; that I am made for pain, and pain for me; for of late, we have been inseparable. It is a most disspiriting distemper. And bring on pain of mind, real or imaginery, it is all one." (65.) (Duchess of Queensberry to S.)

"I am happy that what you write is printed in large letters otherwise between the weakness of my eyes, and the thickness of my hearing, I should lose the greatest pleasure that is left me." (66.)

"God be thanked, I have done with everything, and of every kind, that requires writing, except now and then a letter; or like a true old man, scribbling trifles only fit for children or schoolboys of the lowest class at best, which three or four of us read and laugh at to-day, and burn tomorrow. Yet, what is singular, I am never without some great work in view, enough to take up forty years of the most vigorous healthy man: although I am convinced that I shall never be able to finish three treatises, that have lain by me several years, and want nothing but correction." (66.)

"I shall lose my health by sitting still and my leg in a chair." (67.)

"I am truly sorry for any complaint you have, and it is in regard to the weakness of your eyes that I write (as well as print) in folio." (67.) (Pope to S.)

"I could never be weary, except at the eyes, of writing to you." (68.) (Pope to S.)

"I found my head so disordered by writing a little, that I was fearful of having gout in it." (68.) (Mrs. Barber to S.)

"You must indulge me the liberty of making use of another hand; for whether it be owing to age, or writing formerly whole nights by candle-light, or to both those causes, my sight is so impaired, that I am not able, without much pain to scratch out a letter." (69.) (Lewis to S.)

"I can hardly write ten lines without twenty blunders, as you will see by the number of scratchings and blots before this letter is done." (69.)

"The use I have formerly made of my eyes in writing by candle-light, have now reduced me almost to blindness, and I see nothing less than the pips of the cards, from which I have some relief in a long winter evening." (69) (Lewis to S.)

"This chancing to be a day that I can hold a pen, I will drag it as long as I am able." (69.)

"I am able to write no more." (69.)

"Books turn our brain; and work spoils our eyes." (70) (Mrs. Whiteway to Mr. Richardson.)

"You will pardon the Dean that he does not write to you himself on the occasion; for his head is very much out of order to-day." (71) (Mrs. Whiteway to Mr. Richardson.)

"The Dean is better both in health and hearing than I have known him these twelve months; but so indolent in writing, that he will scarce put his name to a receipt for money." (71) (Mrs. Whiteway to Mrs. Richardson.)

"Violent inflammation, which at first extended over his body, and finally settled into a painful abscess in the eye. For weeks, his agony was so great that it sometimes required the strength of five men to prevent this enfeebled old man of seventy-three from tearing his eyeball from his head. At length the torture did its work. The swelling in the eyeball sank, and the pain ceased. The last struggle of the long combat was over: and the strong man, so long invincible even in decay, sank into apathy and silence forever. In this state he spent three years of living death. There was no longer any frenzied resistance to the mental decay;" (73).

"His appetite is good." "Mortification in his eyelid." (75) (From Orrery to Deane Swift.)

The further solution of the riddle is found in this paragraph:—

"He would not let art remedy the failings of nature; for, having by some ridiculous resolution or mad vow, determined never to wear spectacles, he could make little use of books in his latter years." ("Hill's Unpublished Letters of Dean Swift.")

And for over one hundred years after Swift died, none, lay or professional, observed that the morbid action of the eyes, the most important of the senses or organs of the body, had any morbid effects beyond themselves. However often proved and demonstrated in the added sixty-three years since the one hundred have passed, the "great" and "leading" oculists and clinicians of the world still deny the effects, and whistle millions of patients through their offices with these direct and glaring results unnoticed and uncured. If Swift were their present-day patient, there would be no inquiry as to the eyes. I know more than one great physician who has crippled and morbidized his own life, and the lives of innumerable patients, by the same prejudice against spectacles which caused most of the disease of Swift. Thousands of patients inherit the same silliness and evade the oculist; other thousands do not obey him and reap their reward; more thousands seek the refracting optician and find their inevitable fate; a still greater number flock to the fashionable and "leading" ophthalmic surgeons and pro-

fessors, and their endings are yet more pitiful. Soon or late all come under the care of the cunning neurologists, the rest-cure men, the hysteria doctors, the operators, the private and public sanitariums, the asylums, and finally into premature and desired graves. They might have avoided it all, if they had been well advised and expertly treated by the few men who could have cured or prevented the needless misery. Even Swift, impossible as it was two hundred years ago to secure correction of all his ametropia, might have found at least half-relief. Nearly all could find it now, but not one in a hundred do find it. There are a dozen or two oculists in the civilized world who are relieving several thousand patients a year of Swift's disease, Ménière's disease, and of the diseases of the neurologists and gastrologists, but there are thousands of oculists passing hundreds of thousands of patients through their offices without touching the sources of their migrainous, nervous, and nutritional disorders,—blind leaders, verily of the blind! The few oculists who do know and who do cure, must bear the obloquy and scorn of famelessness and poverty thrust upon them by the many who cry, "Exaggeration!" and "the concensus of Medical Opinion!" Holy Science defend us and our sacred Private Practices!

MEDICAL AND SURGICAL PROGRESS.

RECENT DEVELOPMENTS IN THE THERAPY OF CARCINOMA.

By WM. ENGELBACH, M. D.

The organized campaign against malignant disease, carcinoma,—a problem which has taken possession of the medical world during the last few years—has recently been the subject of earnest deliberation at the Berlin Medical Society. The following abstract is taken from the Berlin letter of Professor Boginsky (*Folia Ther.*, October, 1908) on a series of these papers not yet published, presented before this Society. Although the work of these different authors is somewhat conflicting, there is no doubt that a certain advance is recognized in the understanding of the complicated biologic conditions inseparably bound up with the question of cancer, which inspires the hope that the methods adopted will have a favorable issue. The discovery of an internal treatment of carcinoma, which would be an improvement upon the present incompetent surgical methods, or a method by which surgical treatment could be enhanced by some internal physiologic and biologic influence on the peculiar forces of the organism, has been the aim of investigators in this field.

Dr. Anton Sticker, Chief Assistant in the surgical clinic of Professor Bier, made an important contribution on the effects of atoxyl and foreign albumins on malignant tumors. He gave three methods for the attack of malignant growths.

First, the one now most in use, the destruction by external means. This is the least efficacious because, while not protecting against recurrence, it destroys normal tissue and imposes on the organism the too arduous task of removing destroyed masses. The author calls this the non-specific or cytoid method.

Second, the internal method which he names the specific. This has for its object two purposes: (a) The production of an internal element, as cytolsin, preparing the diseased cells for solution; and (b) a ferment by which a rapid disintegration of the cells prepared by the cytolsin, is produced. Neither of these methods is practical in the treatment of carcinoma; the former because it has proved itself feasible for bacterial processes only; the latter because it is accompanied with such severe toxic effects that the organism succumbs to the superadded poison sooner than to the disease itself.

Third, the method based on the fact, discovered by Blumenthal and Bengell, that the constitution of cancer cells differs from that of somatic cells in that the former are more resistant than the normal cells of the body to peptic ferments and less resistant to trypsin. Other differences have also been shown to exist between somatic and tumor cells, *viz.*, in the amount of autolytic ferment contained and their biochemical constitution. The lytic ferments of tumor cells especially are capable of acting

heterolytically, so that if it is possible to exclude the latter factor by injury to the cells, the autolytic ferment may be enabled to bring about the destruction of the essential constituents of the tumor.

On these grounds the author founded the treatment of new growths with atoxyl (active autoferment) and albumins (heteroferment). Cancerous dogs were experimented on with atoxyl, which proved to be so highly poisonous to them that even with such small doses as 4 grains to 7½ grains, practically all the dogs died with the symptoms of arsenical poisoning. This rendered it necessary to use smaller doses. These produced a slowing of the growth of the tumor, and opposite effects as compared with larger doses, which tended rather to accelerate instead of retarding the growth. Analogous experiments on man have not led to a favorable positive result, as it was not possible to have patients under the influence of atoxyl until all cells of the tumor had disappeared. It was quite otherwise when atoxyl was used in combination with a foreign albumin,—one obtained from the body of another animal. The author gave only one such foreign albumin, although there are many substances which, introduced into the blood as ferments, cause the formation of antibodies, *e. g.*, rennet, antirennet, etc. The method of forming antibodies artificially by means of foreign blood, which are hostile to heterogeneous germinal cells, was originally used by Bier. The author was gradually led to observe that similar blood had the same effect, and to use it to the same end. In performing his experiments, the blood of sheep, cattle, pigs, rabbits, cats, guinea-pigs, and man was used. Sheep's blood proved to be the most efficacious in dogs affected with carcinoma. Soon after the injection of blood it was observed in dogs that there was a lessening in the size of the tumors, particularly in superficial proliferating cauliflower-like growths. The tumor became paler, whilst there was well-marked hyperemia in the immediate neighborhood. This initial success did not continue long, and it was evident that the injections were not well borne; the symptoms of serum disease appeared, but in a more aggravated form than occurs after serum injections. When, however, blood injections were made in combination with atoxyl similarly administered, the bad symptoms were absent, whilst the more favorable effects increased. It appears that by the introduction of foreign blood between the tumor cells, the latter are caused to disappear when attacked by the small quantity of arsenic, which, by the decomposition of arsenious acid, is dissociated from the atoxyl in the organism. We here discern a process repeated which is not infrequently observed, namely, that of spontaneous cure of cancer by the forces peculiar to the organism.

This important discourse met with keen opposition in the discussion, but found a certain measure of support. The most important speaker was Uhlenhuth, chief of the experimental institute of the German Board of Health, who has done an enormous amount of experimental work. From actual experience thus gained he was unable to lend his support to the prospect held out. Injections of atoxyl alone appeared rather to increase than to decrease the growth of tumors in mice, and by such injections combined with blood from various animals, or with the albumin obtained from the lenses of the eyes of animals which, biologically, is the same in the whole animal kingdom, no better result was achieved. In the gynecologic clinic of Herr Bumm no better result was obtained by the injection of blood obtained direct from the placenta. On the other hand, Edel laid stress on the probability of greater success by following up this theory of treatment. Referring to the injections of

mouse blood into carcinomatous mice made by Bashford, in London, he had perceived in the growth of malignant tissue an inversion of the method or way in which embryonal tissue grows, *viz.*, that differentiated tissue reverts to its original condition whilst the growth of the embryo leads to the differentiation of undifferentiated cell material. The boundless proliferation of differentiating growth would indubitably lead to the implication of tissues, providing there was no power in the organism to hinder it, and this inhibiting power, he believes, must be found in the blood or in the juices of normal tissues. Hofbauer attempted the destruction of tumors by injecting subcutaneously in their neighborhood substances which have the power of promoting the activities of bodies operating as antiferments in the organism in the same way as lecithin does with the toxic element in cobra poison. The substances used were in their turn atoxyl, quinine, the serum of cattle, cholesterin, serum containing cholesterin, hydrocele fluid and animal charcoal. The single doses used were: Atoxyl, 0.3 gramme; quinine, 0.5 to 0.1 gramme; cattle serum, 20 to 30 c. cm.; cholesterin first dissolved in alcohol then precipitated with physiological salt solution, 0.3 to 0.5 grains. From his experiments up to date, Hofbauer is able to establish the fact that without exception the tumors decreased in size, and, indeed, almost entirely disappeared. He warns, however, against being too sanguine. These statements met with opposition, especially by Edmund Falk who very much doubted the antifermentative action of the material used by Hofbauer, as well as that of placental blood formerly used by him. It is worthy of note that in all these experiments antiferments were increased as in the case of the ferment trypsin. Trypsin injections have not up to the present proved a success.

EPILEPSY.

A REVIEW OF SOME RECENT LITERATURE.

By SIDNEY I. SCHWAB, M. D.

1. SOME FURTHER OBSERVATIONS BEARING ON THE SUPPOSED THROMBOTIC ORIGIN OF EPILEPTIC FITS.—Turner (*The Journal of Mental Science*, October, 1908).
2. ON THE MECHANISM OF GLIOSIS IN ACQUIRED EPILEPSY.—Southard (*Amer. Journal of Insanity*, April, 1908).
3. THE PATHOLOGY OF EPILEPSY.—Russell (Proc. Roy. Soc. of Med., London, December, 1907, Vol. 1, No. 2, pp. 72-111).
4. SUR LA FORME DITE CARDIO-VASCULAR DE L'EPILEPSIE.—Jacquin (*Ann. medico-psycholog.*, jan.-fevr., 1908, No. 1).
5. EPILEPSIE UND LINKSHANDIGKEIT.—Redlich (*Arch. f. Psychiatrie*, 1908, Bd. XLIV., Hft. 1, S. 59-83).
6. ON THE PRINCIPLES OF THE TREATMENT OF EPILEPSY.—McDougall (*The Journ. of Mental Science*, October, 1908).
7. SOME NOTES ON STATUS EPILEPTICUS AND ITS TREATMENT.—Banks (*Jour. of Mental Science*, January, 1908, pp. 94-105).

The literature dealing with epilepsy is always being added to by contributions which concern themselves with aspects of the disease which have been long the subject of investigation. It is interesting, from time to time, to note a new point of view or a novel conception of the old subjects under discussion. It is for this reason that a review of some of the recent literature on epilepsy might be of some interest.

Turner (1), whose pathology of epilepsy excited considerable attention a year or so ago when it was first published, has contributed "Some Further Observations Bearing on the Supposed Thrombotic Origin of Epileptic Fits." His contention was that epilepsy was a disease occurring in persons with defective structure of the nervous system, either congenital or involutional, in which there is an abnormal state of the blood, characterized by a special tendency to clot, and that the exciting cause of the fits is sudden stasis of the cortical blood-stream, the result of a blocking of cortical vessels by intravascular clots. Inasmuch as this theory postulates a special tendency to clotting in epileptics' blood, apart from those periods when they are under the influence of fits, an investigation was undertaken to determine this point. The evidence now shows that in certain cases, chiefly among those who have infrequent fits, the coagulation rate is only quickened during the time that they are about to have fits. The rest of the contention, according to Turner, still holds good.

As regards the structural defect of the nervous system, the evidence, both clinical and pathological, that epilepsy is associated with structural defect of the nervous system amounts almost to a demonstration. It is associated in a very large number of cases with actual imbecility or idiocy, and in perhaps a still larger number with various grades of weak mind not amounting to actual imbecility. It is not meant that the structural defect of the nervous system is also shown by mental weakness. In some of the cases which during life were normal mentally, autopsy showed evidences of immature or defective cerebral structure. He believes that one of the most striking forms of defective structure, and one

which admirably lends itself to demonstration, is met with in the character of Betz cells. In 65 to 70 per cent. of all epileptics there is present a form of cell, which there are very strong reasons for regarding as an immature form, and which is very similar to an early stage of reaction *à distance*.

In regard to the immediate exciting cause for the fits, he is still of the opinion that they are due to sudden stasis of the blood stream in the cortex caused by the impaction of thrombi in the smaller vessels. This contention is supported (1) by experimental evidence, (2) by histopathologic evidence, and (3) by clinico-pathologic evidence. He has attempted to prove this by experimental facts, which show that sudden stasis of the blood stream is capable of causing convulsions. There have been found intravascular clots, especially in the form of small spherical bodies, in over 80 per cent. of the brains of epileptics examined, which now amount to some fifty cases, a percentage which is much higher than in any other class of cases similarly searched.

The clinico-pathologic evidence which Turner is especially desirous of supporting, deals with experiences in the rate of coagulation in the blood of epileptics. His observations on the coagulation rate of the blood number many thousands, and include, in addition to many healthy patients and epileptics, those suffering from dementia præcox, from acute mania and from imbecility. His conclusions from this material are (1) that the average rate of coagulation in the severe epileptics is quicker than in any other class of cases so far examined; (2) that in epileptics who are subject to frequently occurring fits, the average rate of coagulation during the time they are having fits is quickened; (3) that before (up to 24 hours) and during fits there is a further quickening.

Occasionally, from 24 to 48 hours after a fit, there is, as it were, a rebound effect and coagulation is retarded. In certain epileptics who have single fits at long intervals, the average rate of coagulation is not quickened; it may indeed be retarded, but still in these cases there is before and during fits a relative quickening.

The most interesting feature of these investigations and the opinions derived from them is the possibility of their use in a therapeutic way. Turner, himself, observes that we may have in the administration of extracts from certain glands a means whereby we could permanently retard coagulation and so be in a position to test whether this did or did not affect the epileptic attacks.

One of the most original pieces of work on the mechanism of epilepsy is that by Southard (2) which is entitled "On the Mechanism of Gliosis in Acquired Epilepsy." This work of Southard's lays claim to originality in two directions: (1) in setting forth the properties of typical epileptogenic focus in the cerebral cortex, and (2) the nature of that change in cortical tissue which favors epileptic discharges. He lays emphasis upon certain mechanical characters of the central nervous tissue in disease. The resulting theory might, perhaps, be termed briefly a microphysical theory, in the sense that it seeks a logical basis in an epileptic discharge in certain alterations of pressure in the central tissues. The present study lays the emphasis no longer upon characteristics of nerve fibres or of nerve cells or perhaps of their adnexa. The essay would rather call attention to certain pericellular conditions, giving rise to intimate alterations of pressure. At the present time we can merely describe these conditions and leave their translation in terms of volume energy and of surface energy to the future.

This line of investigation seems to be a direct logical sequence of modern physiological work. Sherrington has emphasized the im-

portance of what happens at the confines of the neurones, the synapses. In five cases which form the histologic basis of this theory and as a result of the study of the pathologic changes, Southard makes a summary somewhat as follows:

"The theory of epilepsy expounded in the present paper is founded mainly upon structural considerations. The histologic data have been interpreted largely from a functional point of view. The theory lays claim to some originality in two directions: in setting forth, namely, the properties of a typical epileptogenic focus in the cerebral cortex, and the nature of that change in cortical tissue which favors epileptic discharges. The characteristic feature of a typical prime focus is described as the separation of a normal cell-group from its normal control by other cell-groups and the impact upon the receptive surfaces of these normal cells of a steady, intimate, abnormal pressure—both segregation and compression effects by neuroglia overgrowth. That feature of cortical tissue which favors the spread of epileptic discharges is described as due to a simplification of cell arrangements, arising in the destruction of controlling elements with maintenance of motor elements. In the production of both prime focus and the abnormal tissue which permits uncontrolled discharge, the neuroglia tissue plays a characteristic part—exerting an active continued pressure in the first instance, and readily permitting lateral discharges and the activation of great groups of motor cells in the second instance. In the former case we see a fresh example of the irritative property of heightened tension—only here exhibited quite in miniature. In the latter instance we are dealing with conditions of still greater theoretical interest, approximating, though with diverse outcome, the loss of insulation seen in foci of disseminated sclerosis. The findings suggest the widely different effects upon nervous tissues of active and of quiescent gliosis."

Whatever may be thought of this work of Southard's, its importance is readily admitted. A theory of epilepsy largely of a physical nature based upon histologic evidence immediately attracts attention. It is of interest to note that both Turner's theory and that of Southard's are largely the result of patient investigation into the histologic structure of epileptic brains, and for that reason, if for no other, impresses one as holding out the hope of a more complete appreciation of the cause and the nature of the epileptic attack. Leaving aside the more theoretical considerations of epilepsy, there are a number of less ambitious papers which deal with separate phases of epilepsy in a clinical way.

Alfred E. Russell (3), in a paper entitled "Pathology of Epilepsy," believes that there is an inherited condition of the nervous system which easily determines the development of epileptic fits. Certain conditions such as severe hemorrhage, eclampsia, organic brain diseases, stimulation of the cortex, uremia and various poisonings as lead and absinthe, are apt to be associated with fits indistinguishable from those of idiopathic epilepsy. Evidences brought forth in this paper in support of the claim that the phenomena of idiopathic epilepsy are dependent upon a failure of cerebral circulation, sudden cardiac inhibition and cerebral vaso-motor spasm. Russell believes that the intravascular clotting suggested by John Turner as a progression underlying the disease is to be regarded a secondary rather than a primary change.

Anglade et Jacquin (4) discuss a form of epilepsy which has been called cardiac-vascular epilepsy: that is, the relation between arterio-

sclerosis and epilepsy. In this paper there is quoted two cases in which very marked sclerosis and lacunar changes were found in the brain, and marked atherosclerosis in the blood vessels. In such instances the epilepsy can not be said to be dependent upon the cardio-vascular changes, but secondary to them.

Redlich (5) discusses in a very interesting way the relation of epilepsy to left-handedness. He found that in epileptics about 40 per cent. shows a slight paresis of the right side. In 125 cases of epilepsy 17.5 per cent. showed left-handedness which is four times as much as is found among normal individuals. This certainly is a very interesting observation and brings up the question of whether evidences of hemiparesis are not much more frequently found in epileptics than was formerly thought to be the case. This finding would suggest further the fact that organic changes are very common in epileptic brains.

Among many papers on the treatment of epilepsy, a paper by McDougall (6) is especially timely. He brings out very clearly the advantages of colony treatment. If in spite of adequate treatment fits persist then the treatment must be modeled upon other lines entirely. The chief problem in these cases is how to diminish, not the frequency, but the importance of the fits. He further says that we must treat not the fits but the man who has the fits. Our object must be to enable him to lead as excellent a life as possible. As a ground work for this scheme use must be made of the two most important human cravings: the desire to be comfortable and the desire to be useful. Except in mild cases where the epileptic can keep a situation and do an ordinary day's work he should, whatever his income or social condition, live in a community of epileptics, for there alone can he be made to feel that he is both useful and comfortable. At a colony a patient finds that his attack is a matter-of-course and a matter of no importance. In his own home the epileptic feels that he is a peculiar person; at a colony he finds that he is a normal citizen. He comes to understand that he must do his share in the community, and there is work for him to do, work that he must recognize as useful work.

This paper of McDougall's, which was read at the annual meeting of the British Medico-Psychological Society, attracted considerable attention and aroused a great deal of discussion. It seemed to be the consensus of opinion that the colony treatment of epilepsy was perhaps the most ideal method, but one which, on account of difficulties, is scarcely to be practiced in any very large way. That the colony treatment would remove from the epileptic the social stigma which, perhaps, accounts for a great deal of the depression in epileptics, must be freely admitted.

Banks, (7) in a paper "On Some Notes of Status Epilepticus," relates his studies in 27 cases. He agrees with Pierce Clark that the sudden cessation of the routine treatment of epileptics may cause this condition. In most cases the patient had been having more than the average number of fits, some days previous to the attack of status, and after the attack appears to leave the patient more prone to them. The routine treatment is given as follows: Hyoscine-hydrobromide is made into a solution of 1-400 and four minims is therefore equal to 1-100 of a grain. At the onset of the status, four minims are given by hypodermic injection. After one-half hour, if there is no improvement, another four minims are given and the following morning an enema. This treatment seldom failed. Of thirteen cases in which the attack was treated in ways other than with hyoscine, ten died from the attack and three recovered.

THE BACTERIOLOGY OF DIPHTHERIA.

By CARL FISCH, M. D.

Under this title a volume,* edited by Nuttall and Graham-Smith, has just appeared. It is the presentation of the whole material that has accumulated of the bacteriologic and pathologic nature of diphtheria. It is not only bacteriology, as such, that forms the contents, it is an encyclopedia of all that is to-day established on the nature of diphtheritic infection. The merely clinical sides of the problem, so satisfactorily dealt with in many publications on this feature of the subject, are mentioned only as a concomitant of the bacteriologic and pathologic conclusions. The volume is composed of original presentations of the whole of the investigations in diphtheria by a number of men that have made the study of its nature their special work. The original work of the writers is not alone discussed, but the whole of the work that has been done in bacteriologic and pathologic investigation on diphtheria receives careful attention. The admirable feature of the book is the absolutely objective estimation of the results following this investigation and the work becomes at the same time a masterpiece of reference in one volume for all that has been published in the different lines of study on diphtheria. For scientific, practical and sanitary questions the book represents a complete review of the development of the growth of our knowledge on diphtheria, a review that makes easy of access—impossible in the widely scattered literature on the subject—all the information needed to study the various features of the problem. The widely scattered, important investigations are here united in a whole, complete up to the present time and presented with absolute objectivity. It does not give so much original addition to the knowledge we have, although the precise way of estimating the facts reported is immensely important as a stimulus to following special lines in solving unanswered questions and shows a complete familiarity with the previous work done on them. In the general textbooks on bacteriology, diphtheria cannot be considered as a subject that calls for more space and details than many other pathogenic infectious diseases. The desire of the authors to make this book the first of a series of books dealing in the same way with other infections must be highly praised. It is to be hoped that they will succeed in this way to make easily accessible the information so far obtained. The subject of diphtheria is dealt with in its different branches by men who are authorities through the work they have done, viewing not only their own work but the work of others objectively. This makes the book a standard, facilitating the future development of the solution of many questions as yet obscure. The single contributions are made by the following authors:

- F. Loeffler, The History of Diphtheria.
- Arthur Newholme, The Epidemiology of Diphtheria.
- F. B. Mallory, The Pathology of Diphtheria.
- G. S. Graham, The Diphtheria Bacillus.
- G. S. Graham, The Pseudo-Diphtheria, or Hoffman's Bacillus.

*The Bacteriology of Diphtheria. By G. H. F. Nuttall and G. S. Graham-Smith, G. P. Putnam Sons.

G. S. Graham, Relation of the Diphtheria Bacillus to Hoffman's Bacillus.

G. S. Graham, Experimental and Natural Diphtheria in Animals.

G. S. Graham, The Modes of Infection in Man.

G. S. Graham, Bacteriologic Diagnosis.

G. S. Graham, Diphtheria-like Diseases.

G. S. Graham, Preventive Measures.

G. S. Graham, Postscarlatinal Diphtheria.

G. S. Graham, Diphtheroid Organisms in the Insane.

G. Dean, Types of Immunity.

G. Dean, The Toxin of the Diphtheria Bacillus.

G. Dean, The Formation of Antitoxin in the Body.

G. Dean, The Effects of Antitoxin on Toxin.

William Park and Ch. F. Baldwin, Mortality.

William Park and Ch. F. Baldwin, Serum Sickness.

The names of the authors and the subjects dealt with show a priori the superiority of the contents of this work above anything yet published on the subject of diphtheria. Prominent throughout the discussion is the absolute impartiality with which the character of problems of doubtful nature is considered without bias by opposing opinions. Loeffler's historical discussion of diphtheria is fascinating by the interesting data it gives but above all by the wide view of one of the discoverers of the etiologic factor of diphtheria on the gradual development and causation of our present knowledge. As such it is a very fit introduction for the material that follows. The epidemiology of the disease is splendidly discussed by Newholme on the basis of statistics and other material that has never been available for general conclusions. One of the most interesting contributions is that of Mallory on the pathology. Concise and clear, it will increase our means of understanding many obscure features of the pathologic changes observed. Most of the work in this book is original and in harmony with Councilman's former studies. It is the first time that attention has been directed to the importance and wide reaching influence of the study of the disease. Graham's treatises comprise in every detail, down to methods and experimental study, the character of the diphtheria bacillus itself. In these treatises material has been accumulated which represents practically everything that ever has been done on the subject. Especially valuable is the part dealing with the pseudo-diphtheria bacillus, lately the object of many investigations and discussions that have even led to certain alterations in the practical method of dealing with diphtheria. Well worth reading also are the remarks on the bacteriologic diagnosis that, in contrast to the prevailing rules, Graham bases on practical rather than on theoretical methods. The consideration of the diphtheria-like diseases and their differentiation is also a subject that has not received such an extensive discussion. Graham's contributions will always remain a source of information on everything pertaining to the diphtheria bacillus. New original contributions are made in many instances by the author himself and published here for the first time. Very extensive and complete is the paper by Dean on all the features connected with the toxic nature of diphtheria. The general consideration of the types of immunity offers nothing new; it is more or less schematic and would have been more impressive had the author not limited it so much to diphtheria, but extended his discussion in connection with the diversity of immunity in other infections and in animals that could lead to valuable

indications of the nature of immunity. The discussions of the diphtheria toxin and that of antitoxin are excellent, as was to be expected from a man at the head of one of the greatest laboratories in the world. Many points arising from the extensive serum work done at this laboratory have added valuable methods to this work, based not only on experience but on experiment. The difference in conception between workers in England and Germany in this respect are marked, but are only a difference of expression not of thought. This is more apparent in the chapter "On the Effects of Antitoxin on Toxin." While such a title is, perhaps, as far as practical purposes are concerned, permissible it does not express the real relation between the two substances,—not an action of antitoxin on the toxin but an interaction between the two, in which the two are equal in character. The effects of antitoxin on toxin can not be realized without the effect of the toxin on the antitoxin. The reactive quality of both is the same in producing the effect.

The discussion of the three theories on the nature of immunity processes is very clear and logical. While we have long known that Ehrlich's side chain conception was not the absolute or true interpretation of these processes, it is impossible even to-day,—with the knowledge that this interpretation must finally be changed,—to achieve this without the methods based on his theory that he himself calls only heuristic. The criticisms made by Dean of the physico-chemical theory of Arrhemius and Madsen are just but do not add more weight to the already existing negative evidence. That Bordet's theory of absorption has some prospect is not impossible, as with some degree of certainty we can assume the immune bodies to be of colloid character. Altogether Dean has given a clear and instructive picture of the modern status of the immunity problems and their biologic, physical or chemical interpretation.

Of immense practical interest are the papers written by Park and Bolduan. They are based on experiences that are obtained in scarcely any other place on earth and are made possible by an unique opportunity of doing work systematically in a city of millions, an opportunity created by the efforts of the two men themselves. The statistical data concerning the influence of various factors on the mortality from diphtheria are of the utmost interest and are important guides in dealing with the disease in other communities. The influence of climatic conditions, race, rainfall and occupation, are set forth, as well also as altitude and soil. The statistics showing the mortality in a long number of years are the index of the value of antitoxin treatment.

The subject of serum sickness is extensively dealt with. This chapter must have been written some time ago, as otherwise it would consider the problem more from the point of view of anaphylaxis. Of course, anaphylaxis is at present still in its childhood, but whatever the final solution of the problem may be the process itself is well established and allows of intricate experimental research. The weight of evidence is greater for the character of an anboceptor complement reaction than for that of the presence of a definite anaphylactin. The experiences of these authors justify them in being cautious of entering into theoretic speculations.

A bibliography so complete that no publication on diphtheria will be found absent, ends the book.

We must note that the editors hope that for other infectious diseases analogous collective works will be possible. If they shall fulfill their mission as satisfactorily as this first volume, our literature will be greatly enriched.

CORRESPONDENCE.

LONDON LETTER.

(FROM OUR OWN CORRESPONDENT.)

The winter session was inaugurated with the usual ceremonial introductory lecture at a few of the schools. This old standing custom is gradually dying out but it dies hard. Without in the least reflecting upon the excellent addresses given by eminent members of the profession, that given by a layman attracted the most notice. As the layman in question was Mr. Rudyard Kipling this is not surprising. He was, as usual, very outspoken, setting forth some plain truths in a way that no medical men would venture to do in the presence of a lay audience. He got in some vigorous blows on behalf of those engaged in experimental research, for which the whole profession owe him hearty thanks, as well as for his very sympathetic description of the work done by our profession. Kipling as a member of the medical profession would be intensely interesting and informing, for a time at any rate. His clinical reports would certainly be worth hearing. To a remarkable power of keen observation he unites the great gift of conveying a great deal in a very few words. His description of locomotor ataxia in his story "Love o' Women" is an instance of this, although, of course, the case differs in more than one important feature from those usually seen and described.

The President of the College of Physicians, Sir Douglas Powell, gave an address at the opening meeting of the Pupils' Physical Society at Guy's Hospital. Dr. Goodhart was the chairman for the evening, in the absence of Sir Samuel Wilks. Sir Douglas chose for his subject, "A Just Perspective in Medicine," and gave a most interesting and valuable address. The subject is a timely one, perhaps more so now than at any other period, when there are so many and various methods of diagnosis, such a bewildering number of remedies and an ever increasing out-put of more or less plausible theories. It is difficult at times to see the wood for the trees, and one is particularly grateful when some experienced and highly esteemed guide gives us the benefit of his advice, enabling us to travel along the proper path and avoid the pitfalls and other traps which beset us on either hand. As Sir Douglas pointed out, "the gift to see things in their due relationship with other things is possessed by but few people, and it is not a little curious to observe how in politics, religion, science, and even art, persons lose their sense of perspective as they become engrossed in the study of one special department or aspect of things." He suggested that it would be wise for every specialist in medicine or surgery to have an assessor, especially in view of the increasing number and profoundly increasing complexity in technique of the specialties in practice and research developed in recent years. He compared the undue importance attached to fever a few years back, and the consequent rush for antipyretics, with the practice now employed based upon a more rational estimation of the factors involved. Pyrexia is a normal reaction to toxic invasion, and a rise of temperature is a symptom

as proper to certain diseases as a normal temperature is to health. Sir Douglas insisted that both on economic grounds and on those of clinical convenience a workable clinical index must be found as a guide in the use of vaccines. He drew attention to the work done by Latham, Spitta and Inman upon the relation of the opsonic indices to temperature, discussing the value of the temperature curve as a guide in tuberculin treatment. High temperatures correspond with negative phases, while normal or, in some degree, sub-normal temperatures correspond to a re-active elevation of the index. Laboratory research may confidently be expected to furnish clinical indices for guidance at the bedside. As these results become part of general clinical knowledge and method so the relational perspective of medical practice will be enlarged and deepened.

Dr. Alexander Macalister, the Professor of Anatomy at Cambridge, gave a most interesting account of medical education, as it was fifty years ago when he attended his first introductory lecture, in his address at King's College. He gave a much needed warning on the necessity of acquiring the faculty of correct and critical observation, which is in danger nowadays of becoming atrophied from want of use. The student is spoon-fed by his teacher and has for use a large number of excellent and sumptuously-illustrated text-books. From these he can assimilate knowledge of a kind without exercising any independent power of observation.

When the teaching University of London is really born alive—for it is greatly to be feared that the latest conception has resulted in a miscarriage—among other invaluable institutions to form part of it will be the splendid museum at the Royal College of Surgeons. In the meantime, with a view of increasing the usefulness of this great collection, the council of the college has arranged for a series of demonstrations to be given in the theatre of the college during the present session by the conservator, Professor Keith, and the pathological curator, Professor Shattock. The course will be illustrated by specimens from the museum. Such a course will be of infinitely greater value to the ordinary man than working through the specimens by himself, an attempt which is, not unusually, unsuccessful owing to the *embarras de richesse*.

The Council of the College has decided to advance in spite of the recent voting. The examinations for both the Fellowship and the Membership are to be thrown open to women. It is, undoubtedly, a wise step to take.

John Burns, our hard-working Resident of the Local Government Board, has by a recent order announced by Dr. Newsholme made a good step forward in the fight with tuberculosis. All Poor-law medical officers are now to notify every case of tuberculosis in parish patients to the local medical officer of health within forty-eight hours after the establishment of the diagnosis, if the medical officer of health should desire it. The desire will depend a good deal upon the sort of sanitary authority there is in power locally. Bumbledom is none too anxious to have slum property strictly dealt with. Progressive councils will welcome the chance of being able to fix upon the foci of infection, or at any rate some of them and those certainly the worst. London has quite recovered from its cold fit of a year ago, and the next election, two years hence, will certainly see a progressive council once more in power in place of the penny-wise and pound-foolish reactionaries now muddling along.

November 20th.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

It is no longer permitted us to refuse to dietetics the first place among the therapeutic methods at our disposal, since to ignore the importance of a rational alimentary regimen for the well as for the sick is to-day a matter for severe censure. But in proportion as one studies the subject, complexities arise due in part to the failure of chemistry to fulfill the hopes on which rested our expectations that it would be our only and absolute guide. From the reactions which take place in the organism we learn only the secondary effects and the combinations as they pertain to a duct; all our investigations fail to reproduce chemical changes in the living tissues. Therefore, the therapeutic deductions from our knowledge of biologic chemistry and, more particularly, of chemistry of the digestion and assimilation, are necessarily very imperfect. We cannot, in all cases, equalize these deductions or depend on the laboratory for a system by which the indications and the schedule of an alimentary regimen can be established. Hence we are forced to place our greatest dependence on calculations derived from the clinic.

If it would suffice, in the tuberculous, to compensate the losses of certain substances by the ingestion, in excess, of foods which would take the place of those that are absent, the problem would be easy of solution. But it is necessary above all things not to lose sight of those special conditions which moreover are very obscure for us at present, and which result from combinations and chemical reactions in a living organism. The clinical results in these special conditions should show us whether our theoretic conceptions have yielded the practical results that would conform with our preconceptions. But the principle on which rests the doctrine of over-alimentation of the tuberculous has not been without some disappointment for doctors, since it has been observed that over-alimentation has produced numerous diseases. Without doubt the end justifies the means, nevertheless one should condemn some bad results from over-alimentation though it may have in its favor a large number of cures. When a tuberculous person increases in weight we generally say that he is on the way to being cured, and that only when a cure is in sight the weight increases. But this has never been proved and as yet the fact has not been established that increase of weight might cause a cure. All doctors know that the obese tuberculous may present very advanced lesions and even cavities; while, on the other hand, a number of patients show ameliorations in their pulmonary lesions, though they remain relatively thin.

Very numerous, indeed, are the published facts of authors relative to divers disturbances resulting from over-alimentation in the tuberculous. Of first importance are the gastro-intestinal disturbances: gastroenteritis and hepatic congestion. Appendicitis is certainly aided by the abuse of alimentation; above all by the excess of a meat diet. Fever in certain cases is exacerbated by the same causes and yields only to a lacto-vegetarian regimen. Moreover, various dyspepsias, from hypersecretion or from atony, from gastric and intestinal fermentations, are a danger in over-alimentation, and it is not necessary to dwell on the dire consequences of these disturbances when they are somewhat prolonged. Nephritis without albuminuria is created, or at least aggravated, by the abuse of foods. To these disturbances which generally occur imme-

diately, it is necessary to add all those disturbances which follow a little later: lithiasis, gout, obesity, diabetes, cutaneous eruptions following auto-intoxication, and aggravation of congestive or spasmodic affections of the respiratory tracts. Clinically, excessive alimentation is shown by the facial expression, which is animated or congested; by the odor of the breath; by the condition of the tongue indicative of retarded digestion; by epigastric distention; and by the tendency to sleep. The examination of the urine shows that it is dark in color, ammoniacal, that it contains reddish brown pigments, and that it sometimes reacts to Fehling's solution or may be albuminous. Finally, the extremes of thermic elevation are sometimes directly dependent on over-alimentation, in so far as it adds an excess of alimentary toxins to the toxins of a bacillary origin.

What ought we to conclude from these facts, save that the prescription of the dietetic and alimentary sort should be, as regards the tuberculous, the object of constant solicitude on the part of the physician. It is just as important, not to say of more importance, to prescribe an alimentation for the sick as the medicines which to-day receive the greatest attention. The alimentary prescriptions should take less note of the quantity of the substances ingested than of their nature and their quality. Hence it is of importance not to lay too much stress simply on over-alimentation, but to prescribe food in a substantial fashion and as the exigencies of the diseased organism demand. In other words, the question of alimentation of the tuberculous should be individually considered in each case. If the patient has normal weight and is not thin, it is not necessary to attempt to fatten him, no matter what may occur later. Cases are very rare where true over-alimentation ought to be prescribed. There are those in which the tuberculous toxins produce a rapid disintegration of tissues; hence, where the patient has azoturia, it is necessary to institute the supplementary ingestion of azotic substances.

The alimentation of the tuberculous should be prescribed and watched as if it were a medicament. Only in daily studying the physical condition of the sick, as it depends on the ingestion of meat, fats, and sugar, is it possible for the physician to institute a regimen, a little more substantial than the one prescribed for the healthy subject. Without doubt the regimen should be less abundant and more rational than the faulty over-alimentation which obtains to-day.

OBITER DICTA FROM FOREIGN JOURNALS.

PSYCHIC EVOLUTION AT THE TIME OF PUBERTY.*

That the period of puberty should mean more to the medical mind than the physical development of the individual is a matter that many well-meaning physicians will regard in the light of the unnecessary, for in its train would be burdens which the already over-burdened medical practitioner is not keen upon assuming. But though there may be an indifferent note in his attitude to so vital a subject, the truth as we see it to-day in all its modern dress compels us not to relegate any longer to matters of secondary importance the study of a phase in human development that already has taken hold of the most advanced minds in general literature. Franz Wedekind's drama, "Frühlingserwachen" (Spring's Awakening), so popular in Germany to-day, is a case in point, and though we as medical men do not generally approve of the drama making inroads into psychology or pathology for its material, we cannot but admit that occasionally an awakening to the necessity of what should engage the attention of the medical mind emanates from certain tendencies in the evolutionary processes of literature. That Dr. René Cruchet is not averse to devoting a searching mind to the subject of the psychic phases of puberty evidences a desire on the part of a medical man to engage seriously in its mazes, and makes us hopeful of further study from medical sources.

The mind, according to an oft-repeated quotation by Lamartine, has its puberty as well as the body, and it is not unusual, says Dr. René Cruchet, for the psychic modifications which occur at this epoch to be more important than those which at the same time are revealed by changes in the body. Since the value of these changes is of paramount importance, in a social sense, it is wrong, when considering this subject, to pay greater attention to physical development and its corporeal characteristics than to mental development. If puberty is a critical period for the body it is no less critical for the mind: therefore, there should be an undivided interest in the study of the repercussions of that awkward age not only on the physique but on the morals so as to combat them in both instances with equal energy. As with the physical growth, one may study the psychical in the three successive periods, that is to say, in the pre-puberty, the properly called puberty, and the post-puberty periods.

The pre-puberty period. After succeeding the phase which is almost exclusively mnemonic and imitative and which is characteristic of the earlier and the later stages of infancy, there follows with the advent of puberty a much more reasonable phase. The mind supplied with all sorts of information which have become fixed by the memory similar to the mechanism of a simple register, evinces a tendency to utilize its store-house of knowledge for itself by forming concrete ideas, and particularly abstract ones, and by comparing and generalizing. Reason and judgment, up to this time impersonal and often incoherent, become more

*Extract from a chapter in the first fasciculus of "La pratique des maladies des enfants," which was published in November, by J. B. Baillière et fils, of Paris.

personal, more just, more secure. Attention is more sustained, reflection more constant, imagination more restrained, the affections more tender, the sentiments less reflex and impulsive, are better curbed, better mastered by a volition which commences to lose perception of itself; the tastes and individual predilections develop; the sexual instinct, until now hardly suspected, commences to effloresce. These divers psychical manifestations tend towards a stable equilibrium: discipline is evidenced, conduct is excellent, work and application are better than formerly. It is the moment in which instructors view with gratification the decided change from boyhood to manhood in their pupils and parents regard with joy the fortunate modifications in the character of their children. One may say of this phase in the development of the child that it bears some resemblance to an analogous change in the physique, but it is different in so far as it seems to gather strength so as to resist attacks at undermining and breaking up the first attempt towards a harmonious equilibrium.

Period of real puberty. In this phase of development we see the psychical crises of puberty which coincide almost exactly with the physical crises of the same period. The psychical modifications which now become manifest are extremely important as a matter of observation and should not be ignored by physicians. They should be studied separately in the young man and in the young woman. In the latter at the same time that the body undergoes the radical change by which the physique of the child becomes that of the woman, the psychical state is transformed, assuming all the characteristics inherent in her sex. Grace and elegance become apparent; the contours of the figure are influenced by them; the art of pleasing is developed and despite her reserved manners, she is most seductive. But puberty emphasizes above all, the good and bad qualities, preferably the bad. If as a young girl she was timid, as a young woman her timidity will be exaggerated with tendencies to pusillanimity and bashfulness, to solitude and isolation; if on the other hand, she was lively and sprightly, her exuberance will degenerate into a veritable agitation, an incessant loquacity. In case there were pride and arrogance and a desire to torment others, we will see superciliousness and humiliation; or if humble and good, there will appear self-effacement and an inability to act, with a tendency to useless sacrifices. Again, if the girl was kind and always disposed to be accommodating, she will develop coquetry to excess, displaying even at times considerable bad taste. Indolence tends toward laziness, unfeelingness toward wickedness, deceit toward falsehood, boasting toward effrontery, thirst for knowledge toward unquenchable ambition. Character becomes irritable, the humor changeable, capricious, fantastic, passing from excessive joy to profuse torrents of tears. Some are sulky, and sly, others violent and enraged. How to approach these souls in revolt is indeed a difficult problem. According to Marro, young girls are most difficult to control between the ages of fourteen and sixteen,—“they would try the patience of a saint.” His inquiries made in many institutions show that lack of application and waste of time coincide with the appearance of the menses and the bodily development; it is the time of bad conduct at school, and faults less grave than with boys—laziness, negligence and uncleanness—manifest themselves.

Those tendencies of the sex which emphasize sentimentality are the ones which at puberty disturb the equilibrium of the mental state and the material aspect of things is constantly derided while the sentimental view is exalted. This sentimental exaltation has been very well described by

Gustave Flaubert, the French novelist, in his characterization of Emma Bovary when she was between thirteen and fifteen. The religious idea arising from long retreats before making the first communion is the one that takes strongest hold on the imagination of Flaubert's heroine because, as the author says, "she was gently assuaged by the mystic languor which exhaled from the perfumes coming from the altar, the coolness of the holy water, and the radiance of the candles." What follows in the book has the same truth: "Instead of following the mass, she fastened her gaze on her books in which were pious vignettes surrounded by azure; on the sacred heart pierced by pointed arrows; on the tortured Jesus stumbling under the weight of the cross. She essayed mortification by fasting for a whole day. She racked her brains in an attempt to find out what unusual vow she could make. When she went to confession, she invented petty sins so as to remain in the confessional box as long as possible, feeling exaltation from remaining on her knees, with her hands interlocked, and her face pressed against the grille eagerly listening to the whisperings of the priest. The references to the betrothed, the husband, the celestial lover and marriage eternal, which recurred in the sermons, filled her soul with delicious and unhopèd-for thoughts." After the religious exaltation the heroine experienced an exaltation provoked by music: "During her music lessons and while she sang she was engrossed with ecstatic views of angels with golden wings, madonnas, lagoons, gondoliers, and though the songs were compositions that were distinguished by nonsense and very little musical art, she nevertheless felt that she was in the presence of a phantasmagoria of sentimental realities." Again, history is the pretext for a similar mental condition: "When reading Scott's novels she became enamored of historic things, dreamed of fencing, tournaments and minstrels. She had the desire to live in some old manor as did the chatelaines who, under the trefoil of a pointed arch, leaned gracefully over a stone parapet in anticipation of some cavalier with gorgeous white plume who would gallop up the road on a jet black charger. She became enamored of Mary Stuart, and her veneration of all illustrious and unfortunate women was intense. Joan of Arc, Héloïse, Agnes Sorel, the beautiful Ferronière and Clémence Isaure, appeared to her as splendid comets in the immense obscurity of history." Geography appealed to her on account of its exotic descriptions: "When she heard for the first time selections from Chateaubriand's 'Genius of Christianity' and realized the meaning of a sonorous lamentation of romantic melancholy, she thought it was repeated in all the echoes heard on earth and in eternity." And when in the dormitory, by means of the meagre light of an Argand lamp she examined the pictures in her geography, she dwelt on those which depicted "sultans with long pipes, bayaderes, gïaours, Turkish sabres, Greek headgear, and above all indistinct landscapes of dithyrambic countries which would show her at one and the same time palms, fir-trees, tigers on the right and lions to the left. Tartar minarets extending to the skies, Roman ruins and squatting camels,—all framed in a virginal forest with the sun-rays falling perpendicularly on a sheet of water on which idly float a number of beautiful swans. * * * * *" At this epoch she read surreptitiously "Daphnis and Chloe" and "Paul and Virginia." "She had read 'Paul and Virginia' and she dreamed of a cabin built of bamboo, of a slave, like Domingo, and a dog like Fidèle, but above all of a friendship with a little brother who plucks the most luscious fruit for her in arbors higher than a church steeple, and even wanders in his bare feet miles over the sand to bring a bird's-

nest to her. Her mind was taken up with love, lovers, mistresses, persecuted ladies who swoon away in solitary pavilions, postillions that are killed when making relays, horses that are lashed until they fall, somber forests, heartaches, oaths, sobs, tears, and kisses, casements with moonlight streaming through them, nightingales in far off boscaes, men brave as lions, docile as lambs, virtuous as no one has ever been, always prosperous and fit, always lamenting."

This pen picture of a strang sentimentalism, though somewhat exaggerated, corresponds at least in part to the mental state of the young girl passing through a pubescent crisis. Unfortunately most of us ignore the psychical manifestations, or at least regard them with a considerable degree of scepticism or indifference. Educators and doctors should not overlook this important matter for it devolves on them, not only to watch and care for the growth of the body but to place under strict surveillance the psychical manifestations, so that some sort of curb can be placed on undesirable and exaggerated mental qualities.

HISTORICAL NOTES.

JEAN-PAUL MARAT, THE PHYSICIAN.

The world has had its surfeit of Marat, the demagogue, the man who edited *The Friend of the People*, the man of all bloodthirsty men in the French Revolution, who was always shouting for 100,000, 200,000 heads, and whose hatred of rank and order and the peaceful life so graciously introduced into France by Louis the Great and Louis the Well-Be-



JEAN-PAUL MARAT.

loved, has never been equaled in the world's history! In the words of a historian of the times: "To mention so monstrous a name as Marat's is a declaration of one's sympathy with the impersonation of horror and devilry, for hast not history covered the name with mire and blood?" Now though all this may be true and is not much in favor of Marat, the demagogue, there was nevertheless another side to his character, a phase which had its supreme manifestation during his sojourn in London and later on in Edinburgh, at a time when not only the practice of medicine engrossed his attention, but when scientific studies of quite an exceptional nature were recorded to his credit. The conflicting re-

ports which have come to us from various French historians, whose chief virtue seems to be a deplorable party spirit, makes Marat out to be a charlatan. Michelet, for instance, in his "History of the French Revolution," chap. IX., Vol. II., says: "It is reported that at times Marat was in such reduced circumstances that he was compelled to sell medicines in the public places of Paris. Marat claimed to be a doctor; I regret that I am not able to verify his claim." Two pages further on in the same book, the author forgetful of what he had written, says, "Marat joined the household of the Comte d'Artois, first in the humble capacity of physician to the stables, but later on by brevet to the exalted position of physician to his guards." And thus the historian, Montjoie, author of the "History of the Conspiracy of Philippe Egalité:" "Marat always sold herbs to the lower classes, they being credulous and most eager for the remedies, because he assured them that his preparations were simples which came from his own province and had been metamorphosed by him into a universal remedy. With the wealthy he posed as the inventor of a specific water which would cure all diseases. He sold of this miraculous water thousands of small bottles, the fixed price being two louis per bottle. It is not an exaggeration to state that a water invented by a scamp as bad and ignorant as Marat could be nothing else than poison."

Despite these rather derogatory statements, reflecting on Marat's status as a reputable physician, the facts which greet us to-day after the obscurities incident to political hatred and rivalry have been swept away, are decidedly in his favor. For we read in all the unbiased books bearing on his life that both in London and Edinburgh he enjoyed an enviable reputation as a medical practitioner. His "Essay on Man," his "Enquiry into the Nature, Cause, and Cure of a Singular Disease of the Eyes," with a dedication to the Royal Society, his "Memoir on Medical Electricity," speak well for his philosophy and science; and though the first provoked Voltaire on account of its attack on Helvetius into making the well-known satirical remark, "How does it happen that a doctor never makes mention of Hippocrates," we should not lay too much stress on such mordant wit to the detriment of Marat, the physician, but remember for the sake of the man's reputation as an eighteenth century ornament of the medical profession that his "Memoir on Medical Electricity" was crowned August 6, 1783, by the "Royal Academy of Sciences, Belle-Lettres and the Arts" of Rouen, and republished the following year, at Paris, by Sorry. The program the Academy announced was: "To what extent and in what diseases should magnetism and electricity be used?" In the meeting of August 6, the prize was handed to Marat with the following words: "Though the author has not offered anything new in regard to the vexed subject of magnetism, he fills all the conditions in regard to the questions pertaining to electricity as a therapeutic agent, for he mentions most precisely the diseases in which it should be applied to effect an amelioration of the symptoms, and the diseases in which its use would cause only harm." It is well to remember here that though Marat's enemies made him out to be a charlatan, he refrained from paying but the slightest attention to the subject that is most intimately associated with charlatanry—magnetism.

Recently we have read a deal about doctors and politics, and though our predilections are for doctors to take more than a passing interest in so vital a subject, we should not forget what political fervor did in Marat's case to blacken even his reputation as a physician. We hold no brief for Marat, the demagogue, but for Marat, the physician, the philosopher, the savant, we have nothing but praise.

BOOK REVIEWS.

STOEHR'S HISTOLOGY. Arranged Upon an Embryologic Basis.—By Frederick T. Lewis, M. D. From the 12th German Edition, 6th American Edition. 450 Illustrations. Philadelphia: F. Blakiston's Sons & Co.

Stoehr's book, which was, in the former American editions, more or less identical with the German publication, has been changed entirely in this sixth American edition. It is not Stoehr any more, but Lewis. Histology has been for a long time a purely descriptive branch of science, although the connection with the problems of the development of the structures has not been neglected. Only lately has the material in this direction so increased that the idea of a histology prepared on an embryologic basis suggests many interesting possibilities. Histology, as such, is not a science; it only becomes science when it considers the structures in the light of development, and the physiologic or biologic meaning. Whether histology, when based on embryology, will alone lead father in this direction is doubtful, as it must not be forgotten that embryonic histology is, practically, also only descriptive. The different stages in the structure of the tissue can be determined only by their structure; and that is not the final question, for the question of the total biologic change and differentiation that occurs, and of its nature, remains to be answered. The time has not arrived when this can be done, and therefore histology based on embryology must necessarily remain for a long time a one-sided study—that is only descriptive. Such a histology can not be more than a combination of various histologic characters in various periods of development. The intimate nature of these changes can not be determined by it. It may be interesting to follow up microscopically the development of a tissue or organ, but this will not alone do anything to further our knowledge of the causative factors. There is no doubt that the relation of embryologic to mature structures is of interest, but that it makes histology a matter greatly superior to what it was before, can not be accepted. Lewis's book certainly is interesting, but for histologists those portions only that are Stoehr's can be regarded as binding; the rest may be to a degree an introduction to embryology, but not an advance in the study of histology. The history of natural science shows the first steps leading to the advancement of knowledge were purely anatomic and morphologic. They are still the bases of all our biologic work. The point is that histology has not yet solved all the problems of histologic structure, and that much more work, particularly in the histologic line, is needed to reach a final definite basis of further correlations to other problems. We are at the present time too ignorant of the meaning of structure not to feel the compelling necessity to analyze this structure to the utmost possible degree. Late discoveries in this line have changed the whole aspect of structural conditions to a great degree, and it is very probable that even the basic factor of histology, the cell, will yield to other interpretations. To make histology, whose purpose is to demonstrate only structural conditions by comparison with embryologic stages of the equivalent structures, a wider field of study and understanding is, at the present time, as said before, a one-sided procedure, for we are not far enough advanced to go much beyond the structure of the object. Anatomy and morphology, macro- and microscopic, are still the tangible bases of many biologic problems; to these, too, belong many biologic processes,—immunity, anaphylaxis, etc.,—in which only the morphologic changes are histologically comprehended; the intimate nature of the process is unknown.

FOODS AND ADULTERATION.—By Harvey W. Wiley, M. D. P. Blakiston's Sons & Co., Philadelphia. 1907.

The character of this important book is such that it is adapted not only to the use of the scientist and the manufacturer of foodstuffs, but also to the consumer. It deals with explicit discussion of the methods and manufacture, the food values, standards of purity, regulations for inspection, simple tests for adulteration, effects of storage, and other features of the subject. In glancing over its contents the impression is given that the book furnishes an impartial

and logical consideration of the role of the problem of pure food. The notions commonly held are based only on habit and experience; to bring them together in their entirety, as a subject of scientific study and exact work, and thus giving the means for definite rules and regulations, is the purpose of Wiley's book. Although the positiveness of statements on certain questions may not be fully justified by definite evidence, it is a valuable proof of the earnestness with which the book has been composed. To the chemist and biologist it is a source of many suggestions concerning obscure questions. Even for physiology much material of great interest is to be found. The book is well written and many excellent illustrations enhance its interest to the reader.

DISEASES OF THE SPINAL CORD.—By R. T. Williamson, M. D. (Lond.), F. R. C. P., Assistant Physician, Royal Infirmary, and Lecturer in Medicine, Victoria University, Manchester. Oxford Medical Publications, London. 1908.

This book is based upon notes and lectures which have been given by the author at the Manchester Medical School during the last fifteen years. The book is designed to be a text-book and an introduction to the subject of diseases of the spinal cord. As such it performs its service with credit. It is especially valuable from the standpoint of the student on account of its clear clinical description, its more or less dogmatic manner of stating things and its clear diagrams. The illustrations pertaining to the pathology of diseases of the cord are not nearly so well selected, and many of them are badly reproduced. The fact that they are taken from the author's own specimens and not copied from some other text-book, is worthy of comment and praise. Some of the diagrams, however, are rather remarkable. For example, figure 81, a diagram to show positions in which spinal tumors may develop, is extremely ingenious. The series of diagrams to illustrate myelitis are so planned that the student can get, at a glimpse, the points brought out in the text. Some of the pathological descriptions are vague; for example, the pathology of multiple sclerosis leaves the reader in considerable doubt as to the author's own point of view in the matter.

The chapter on Tumors of the Spinal Cord is not very satisfactory for the reason that advantage is not taken of some of the recent literature, notably that of Oppenheim and Bruns. There is, however, less reason to criticize omissions of this kind than there is cause to praise the clear description, the precise manner of statement and the general directness of style. These make for a successful text-book which will enable the student to become intimate with the known facts relating to diseases of the spinal cord. Inasmuch as the text-book aims to fulfill the needs of a student and as an introduction to the subject, it can be said that it amply fulfills its purpose. That most of the information contained in this book can be readily acquired in the larger text-books on neurology, is in no way a criticism. It is much more convenient, frequently, to have so large a subject as diseases of the nervous system, divided into component parts, and the fact that one part is treated as a distinct subject by one man, lends a certain novelty not to be found in the larger treatises. This book can be unhesitatingly recommended to students and practitioners, and it contains, moreover, much that may interest and broaden the knowledge of the specialist.

A TEXT-BOOK OF NERVOUS DISEASES AND PSYCHIATRY. For the Use of Students and Practitioners of Medicine.—By Charles L. Dana, A. M., M. D., LL.D. Seventh Edition. William Wood & Co., New York. 1908.

The seventh edition of Dana's text-book is in some respects a marked improvement on the former editions. The general scheme of the book is much the same, expressing as it does the personal views of this well-known neurologist. A subject deserving mention is the Sensory Neuroses of the Cerebrospinal Nerves (Chapter X). This includes a description of paresthesias, neuralgias and affections of the cranial nerves. Just why Dr. Dana includes all these under this title is not clearly evident, unless he is doing away altogether with the former conceptions of the term "Neuroses." At any rate the grouping together under the one head of sensory disturbances makes for clearness and compactness.

Dr. Dana's chapter on Progressive Muscular Atrophies is classified according to his own plan. This contains much of his later work, and certainly aids in making the subject clear; that is, as clear as it is possible to do with our present knowledge.

The defects of this book are in the main the defects of many books in neurology, which attempt to cover the whole subject within narrow limits. One is rather disappointed in the chapters devoted to therapy and the very general way in which treatment is outlined. The chapters on diseases of the mind are a distinct disappointment, chiefly for the reason that they are evidently written as an appendage to this book and not dignified with the proper space that they are entitled to.

On the whole we might say that Dana's text-book is one of the most satisfactory of the lesser text-books on neurology. It is perhaps better adapted to the student's needs than any other work in the English language. The book impresses one as having been written with the student's point of view constantly in mind. Too much praise can not be given to Dr. Dana's style and to the careful arrangement of his material. The make-up of the book is good, illustrations are effective and the diagrams are very helpful.

GESCHICHTE DER LARYNGOLOGIE AN DER UNIVERSITAET HEIDELBERG. Von Professor Dr. A. Jurasz. Verlag von Curt Kabitzsch. Wuerzburg. 1908. Mks. 3.

Resigning from the chair of laryngology, held by Jurasz for many years in the University of Heidelberg, he considers it his duty to give a clear account of the work done in this branch of medicine in that famous school of medical teaching. Incidentally he presents in this way a history of the development of laryngology as a specialty since the invention of the laryngoscope.

DIE KRANKHEITEN DER NASENSCHLEIMHAUT. Von Dr. Leo Katz. Mit 8 Tafeln und 34 Abbildungen im Text. Verlag von Curt Kabitzsch. (A. Stuber's Verlag) in Wuerzburg. 1908. Mks. 6, 80.

This volume represents the first attempt in medical literature to deal exhaustively with all known diseases of the nasal septum. The subject is thoroughly covered in 12 chapters, each concluding with a bibliography on the special question considered in that chapter. Illustrations and colored plates are excellent.

DER MENSCHLICHE KOERPER IN SAGE, BRAUCH UND SPRICHWORT. Von Professor Karl Knortz, North Tarrytown, N. Y. 1909. Verlag von Curt Kabitzsch. Wuerzburg. Mk. 3, 20.

It is well known that many legends, proverbs and peculiar customs have special reference to the human body. To collect all these references and arrange them in anatomical order may seem an impossible and rather unnecessary task. Our fellow countryman in North Tarrytown has undertaken such a work, and undoubtedly has spent innumerable hours in collecting this immense material. As the result of his labor of love he presents us with a very interesting volume which not only makes attractive and amusing reading, but also must be regarded as an important contribution to ethnologic literature.

CONSUMPTION. Its Prevention and Cure Without Medicine, With Chapters on Sanitation and Prevention of Other Diseases. By Chas. H. Stanley Davis, M. D., Ph. D. Second Edition, pp. 218. New York. E. B. Treat & Co, 1908.

This is a clear and readable presentation of the modern hygienic treatment of tuberculosis, intended primarily for the layman, though the physician himself may find much of value in it. It is decidedly the sort of book to put into the patient's hands for self-instruction.

A MANUAL OF CLINICAL DIAGNOSIS. By James Campbell Todd, Ph. B., M. D. Illustrated. Pp. 319. Philadelphia and London: W. B. Saunders Co. 1908.

A brief but adequate compilation that will be found useful by those who desire an account of modern clinical laboratory methods in small compass.

PAIN, ITS CAUSATION AND DIAGNOSTIC SIGNIFICANCE IN INTERNAL DISEASES. By Dr. Rudolph Schmidt. Translated and edited by Karl M. Vogel, M. D., and Hans Zinsser, A. M., M. D. Pp. 326. Philadelphia and London: J. B. Lippincott Co.

In undertaking a systematic analysis of pain, Dr. Schmidt has performed a useful service. The great difficulties attending such an analysis hardly need to be emphasized to the general practitioner, who is so often called upon to interpret the subjective complaint in terms of the temperament and individuality of the patient. In fulfilling his task, the author has throughout tempered his deductions from actual pathologic processes with a careful critical consideration of the functional elements, which, in the phenomena of pain, so frequently cloud the clinical picture. The translators have added a chapter

embodying a brief presentation of Head's researches on referred pains and a series of diagrams showing some of the commoner seats of pain or tenderness in visceral disease.

DIE BEDEUTUNG DER LANGERHANS' SCHEN INSELN IN IHRER STELLUNG ZUM UEBRIGEN PANKREASGEWEBE UND IHRE BEZIEHUNG ZUM DIABETES. Von Dr. med. Manfred Fraenkel in Charlottenburg. Wuerzburger Abhandlungen aus dem Gesamtgebiet der praktischen Medizin. Wuerzburg. Curt Kabitzsch (A. Stuber's Verlag). 1908.

The islands of Langerhans by means of their internal secretion play an important role in carbohydrate metabolism and, if diseased or functionally impaired, in the production of diabetes. They are however not independent organs, merely associated anatomically with the pancreas but arise originally from pancreatic glandular tissue and if destroyed may, to a certain extent, be regenerated from it.

BEITRAEGE ZUR KLINIK DER TUBERKULOSE. Band IX., Heft 1, 2, 3. Wuerzburg. Curt Kabitzsch (A. Stuber's Verlag). 1908.

This journal with its excellent clinical, diagnostic and therapeutic articles continues to justify its existence. As is natural, the lion's share of the volume is taken up with discussion of the new tuberculin diagnostic methods. An extended examination of these methods by Wolff-Eisner, with which the volume opens, deserves special mention.

BEITRAEGE ZUR KLINIK DER TUBERKULOSE UND SPECIFISCHEN TUBERKULOSE-FORSCHUNG. Band X., Heft 1, 2, 3, 4. Wuerzburg. Curt Kabitzsch (A. Stuber's Verlag). 1908.

Like its predecessors the tenth volume of this journal continues to offer a number of excellent articles. The therapeutic and diagnostic use of tuberculin occupies a large share of its space but several articles on x rays diagnosis deserve attention.

SPECIELLE DIAGNOSE DER INNEREN KRANKHEITEN. Ein Handbuch fuer Aertze und Studierende, nach Vorlesungen bearbeitet von Dr. Wilhelm v. Leube. Siebente neu bearbeitete Auflage I. Band, 1904; II. Band, 1908. Leipzig. Verlag von F. C. W. Vogel.

Those familiar with Prof. von Leube's great work on clinical diagnosis will welcome the new seventh edition of which the second volume has just appeared. Few books in the entire realm of medicine combine so strikingly a typical German thoroughness and completeness with a charm of style that makes easy and pleasant reading. Among many excellent features, attention should perhaps be especially called to the chapters on diseases of the nervous system. Nowhere else, will the general practitioner find a clearer or more trustworthy guide through this to him so tangled and obscure a wilderness. It is to be hoped that the book will soon find a competent translator.

SURGICAL EMERGENCIES. By Percy Sargeant, M. A., M. B., B. C., F. R. C. S., Surgeon to Out-Patients, St. Thomas's Hospital, etc., London. 1907. Oxford University Press, American Branch, 1907.

A fairly complete handy guide, which gives a concise account of the methods of treatment of various conditions that are classed as emergencies. The classification of injuries and the indication and methods of treatment are along the lines practiced by the best surgeons and are characterized throughout by their simplicity.

PROSTATIC ENLARGEMENT. By Cuthbert S. Wallace, M. B., B. S., F. R. S. C., Surgeon to the East London Hospital for Children, etc., London. 1907. Oxford University Press, American Branch, 1907.

The author has given us a book which covers in a satisfactory way a field that has recently held much of our attention. The operative treatment of the enlarged gland is taken up largely from the view-point held in England where the suprapubic route is most often employed. It is certain that the author fails to put the case strong enough to alter the views of one who has had experience with the perineal route, and the admission that there are some cases where the suprapubic route is inadequate makes the position much weaker. But it is true that if the choice of operation depended upon the descriptions of methods as found in this book, only one would be used, because the perineal operation, with which the author evidently has had little experience, receives but slight attention.

CLINICAL LECTURES AND ADDRESSES ON SURGERY. By C. B. Lockwood, Surgeon to St. Bartholomew's Hospital, London. Oxford University Press, American Branch, 1907.

This is the second edition of this collection, which speaks for the reception the volume has received. There is no attempt to make a treatise, but the lectures have been reprinted as they were given, and deal with unrelated subjects. The teacher of clinical surgery will get many valuable suggestions from the introductory lecture, and the lectures on "Clinical Reasoning," and "Essentials of a Diagnosis." Models of form, they possess an interest and charm which carry one through them with pleasure, for rarely does one encounter such a finished example of the teacher's art. Other chapters make this an instructive collection, in which information is imparted in a pleasant colloquial form by an observer who has had much experience and has profited much from it.

TABER'S POCKET ENCYCLOPEDIA MEDICAL DICTIONARY. By C. W. Taber and Dr. Nicholas Senn, the late famous surgeon. A new departure in a medical dictionary. All important subjects defined encyclopedically. From one to three pages given to vital topics. Anatomy, physiology, therapeutics, dietetics, hygiene, operations and thousands of other subjects treated. Cross-indexed. Illustrated. 418 pages. Flexible black leather, gold stamping, gilt edges. \$1.50.

THE PHYSICIAN'S VISITING LIST FOR 1909. Philadelphia: P. Blakiston's Son & Co. Price \$1.00.

For the last fifty-seven years this has been the recognized visiting list for the American physician. No more practical arrangement could be conceived, and the fact that the list is adapted for 25, 50, 75 or 100 patients per day makes this book useful to all practitioners.

TEXT-BOOK OF OPHTHALMOLOGY. By Dr. Ernst Fuchs, Professor of Ophthalmology in the University of Vienna. Authorized translation from the Eleventh Revised and greatly enlarged German Edition, with numerous additions, by Alexander Duane, M. D., Surgeon Ophthalmic and Aural Institute, New York. With 441 illustrations. J. B. Lippincott Co., Philadelphia and London.

The necessity of a new English edition of Fuchs' well-known text-book is evident from the fact that four German editions have been issued since the last English edition appeared. The edition just published has been thoroughly revised and brought up to date in all its parts, so that it presents an excellent summary of ophthalmological science as we know it today. The most marked changes are found in the sections on diseases of the cornea, the pathology of iritis, sympathetic ophthalmia, chorioiditis, glaucoma, diseases of the optic nerve, the disorders of motility, diseases of the orbit and refraction.

It is unnecessary to state that the translator, Dr. Duane, has done his work with extraordinary fidelity to the spirit of the original, and presents a text of excellent English free from reminiscence of the native idiom. He should also be praised for his exact appreciation of the deficiencies of the original, from the point of view especially of American ophthalmologists, and the tact with which he has supplied these deficiencies.

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